JUNE 13, 1960

PAPER TRADE JOURNAL

Flash Drying of Groundwood Pulp Pays Off Well for Norwegian Mill

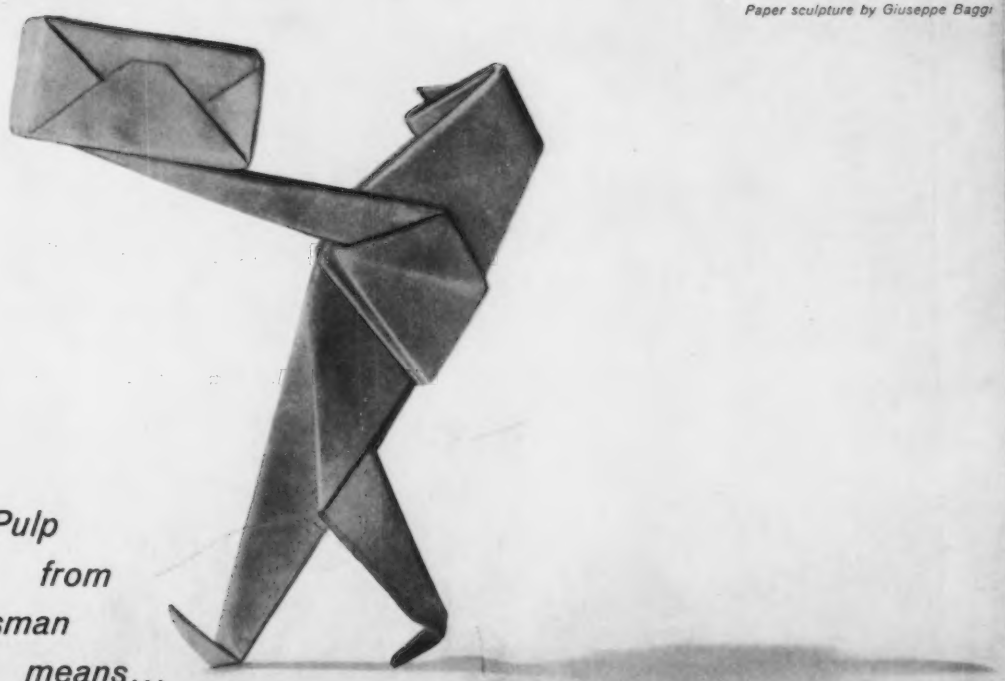
50 Yrs. for Forest Products Lab, Some Notables From P & P Section

3 Keys to Stock Pumps: Material, Air Entrainment, and Consistency

Finishing 8: How Sales Policies Can Help Finishing Efficiency

Editorial Dept.
University Microfilms, Inc.
313 N. First St.
Ann Arbor, Mich.

Paper sculpture by Giuseppe Baggi



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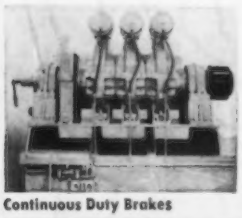
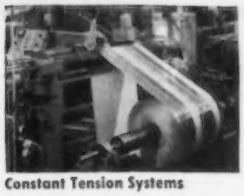
Here is the background for truly integrated roll control...



Continuous Duty Brakes

Unwind Stands



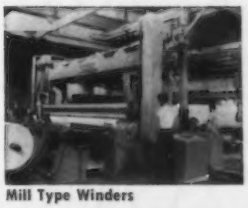
Constant Tension Systems

CAMERON BRAKES
Continuous duty pneumatic friction unwind brakes varying in capacity from 3 to 5 horsepower, on up to 360 horsepower, available in many different models and arrangements.

CAMERON UNWINDS
Shaftless and shaft-type unwind stands, including the shaftless automatic pickup type, all available in capacities to suit.

CAMERON CONSTANT TENSIONS
Several highly developed types including the pneumatic dancer roll type, and pneumatic-hydraulic and electric models, all featuring fast, sensitive response; all available with electronic or air-operated side register controls.

CAMERON MILL TYPE WINDERS
Two-drum surface wind, and surface-center wind models, each available in several series, including the famous Cameron Imperial, world's fastest heavy-duty mill-type winder. The Cameron line includes winders and slitter-rewinders to meet every mill and finishing room requirement.



Mill Type Winders

Roll Ejectors, etc.

Converting Equipment

OPTIONAL EQUIPMENT
Optional Cameron equipment, designed to save time and minimize damage, includes automatic shaft injectors, shaft pullers, core loaders, roll ejectors and roll unloading tables.

ACCESSORIES
Cameron accessories include pneumatic score-cut, shear-cut and special slitter elements, slitter wheels, slitter wheel grinders, core cutters, etc.

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Famous custom-built TIDLAND pneumatic shafts for all types of roll winding and unwind service are sold exclusively by Cameron.

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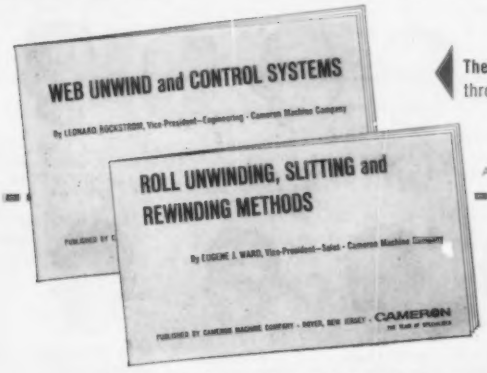
Thus, Cameron offers you the complete background for a truly integrated roll production system. To stay ahead, call the Cameron team of specialists . . . get The New Roll now!



These two valuable books have been written by Cameron specialists to help you break through to new higher levels of profitable operation. Request, by title, your free copies.

CAMERON MACHINE COMPANY, FRANKLIN ROAD, DOVER, N. J.
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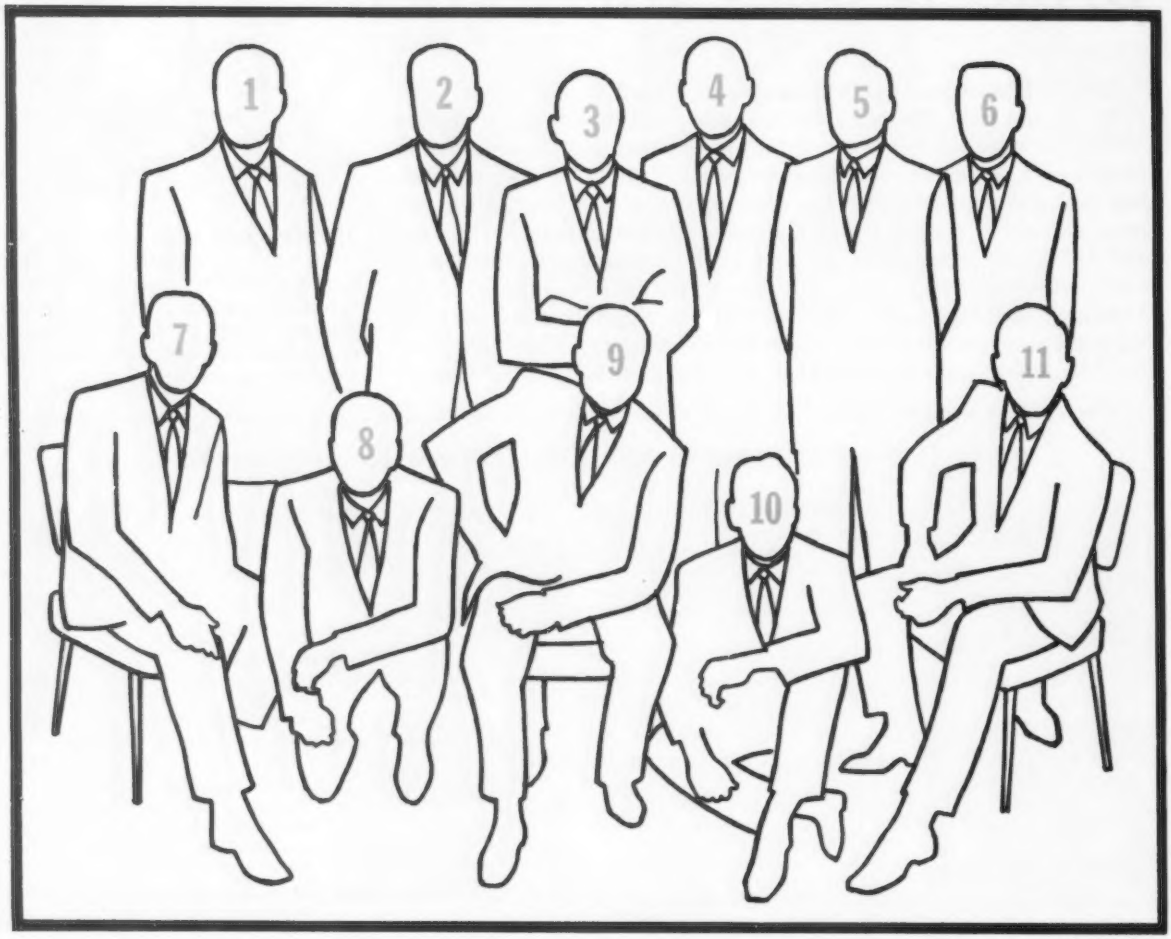
CAMERON
a team of specialists

54 years devoted exclusively to the design and manufacture of slitting, roll winding, unwind and web control equipment.

ALLIS-CHALMERS

A-1319



Group photo of 11 Allis-Chalmers paper industry specialists

too busy to pose

. . . but that's the way we work at Allis-Chalmers. Attention to customer service makes it hard to get these 11 specialists together for picture taking. Emphasis on giving prompt, practical solutions to the mechanical and electrical problems of our customers has given us a breadth of experience that no other manufacturer can offer! Whether you are looking for information on a single piece of equipment or on a complete process, contact your A-C representative or write the Industrial Systems Dept., **Allis-Chalmers,** Milwaukee 1, Wis.

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2 **H. K. Kingsbury** General Mill Pumps

3 **L. C. Vogel** Paper Stock Pumps

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9 **P. W. Clark** Systems Co-ordinator

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PUBLISHED WEEKLY SINCE 1872

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REMEMBER THESE DATES

June 14-16. TAPPI Pulp Bleaching Conference, Edgewater Beach Hotel, Chicago, Ill.

August 22-24. TAPPI Alkaline Pulping Conference, Multnomah Hotel, Portland, Ore.

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*Idea submitted by J. H. Langer, 154 Oswego Lane, Plattsburgh, N. Y.

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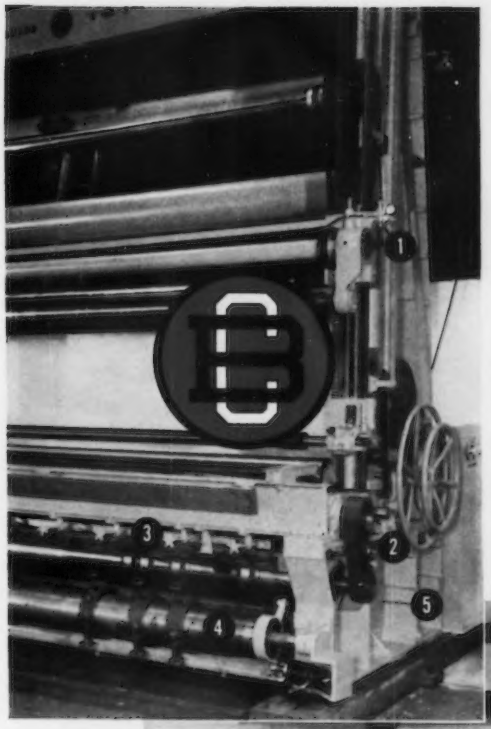
Since then, over 100 years
of skill, experience and integrity
has been woven into Hamilton Felts.
Every operation in their manufacture,
from the selection of highest quality wools,
through the careful looming,
joining by hand, and finishing process—
is characterized by our
traditional code of craftsmanship.
Today's Hamilton Felts—'the peak of perfection'—
also incorporate the results of our
continuing program of technical improvement."

If one of our 300 modern,
technically proven styles
won't solve your specific problem,
we'll be happy to design a Hamilton Felt that will.
Just ask your Hamilton Felts Service Salesman.

SHULER & BENNINGHOFEN, HAMILTON, OHIO



TD 12

the modern standard for slitter-winders

1. Air-operated automatic riding roll pressure relief eliminates use of loose counterweights and oil hydraulic systems
2. Tooth belt main drive and rear shear drive . . . no lubrication . . . minimum maintenance
3. Readily adjustable bow spreader bar complete with variable pressure points
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5. Heavy framing for vibration dampening and rigidity

Standard, readily available commercial parts

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Convert with Confidence

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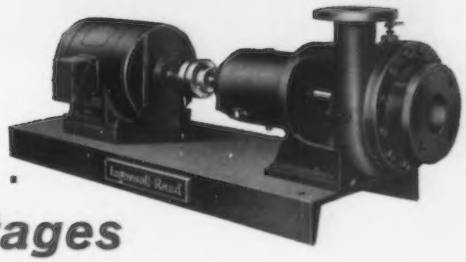
cradle-mounted pumps for any application . . . *all with these basic advantages*



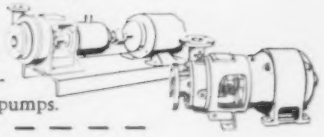
Simplicity of design, rugged construction, careful material selection and expert workmanship enable Ingersoll-Rand cradle-mounted pumps to meet the highest performance standards, year after year, with minimum attention or maintenance.

Built in sizes through 100 horsepower, deliveries range to 3200 gallons per minute, heads to 525 feet. Single or two-stage models available with threaded or flanged intake and discharge connection.

Call on your nearest Ingersoll-Rand pump specialist to help with your liquid-moving problems. There are standard or engineered units to suit any requirements.

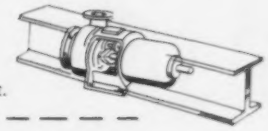
interchangeability

— hydraulically and physically, the pump ends are interchangeable with I-R Motorpumps.



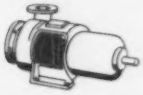
maximum strength

— barrel type construction gives greatest rigidity and perfect alignment.



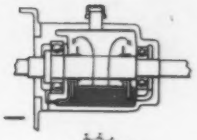
accessibility

— large side openings provide easy access to stuffing box.



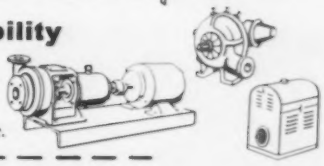
effective bearing lubrication

— ring-lubricated bearings easily handle radial and axial loads.

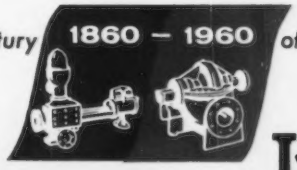


driver flexibility

— permits use of motor, turbine, engine or belt drive.



a century **1860 — 1960** *of pump progress*



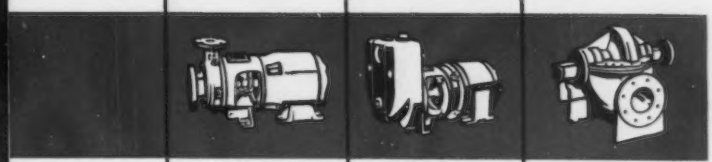
from the leading manufacturer . . .

Ingersoll-Rand

89A9 11 Broadway, New York 4, N. Y.

A turbine-driven cradle-mounted pump and a motor-driven standby in a manufacturing plant power house.

OTHER I-R PUMPS AVAILABLE



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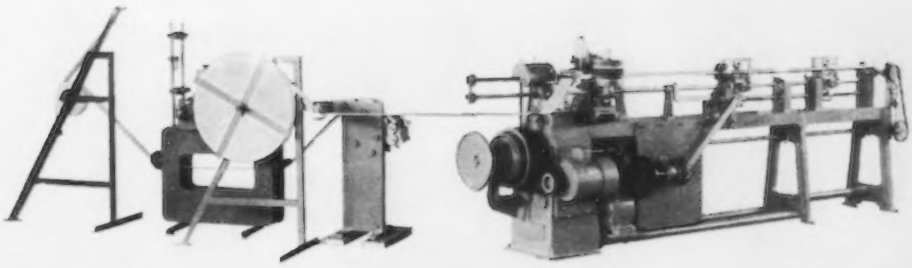
Creative engineering and development of converting machinery



New mechanical Core Machine — up to 200 feet per minute! A completely new mechanical core machine just developed by Paper Converting – Model 2330 – operates efficiently at high speeds, 180 to 200 feet of core per minute. Variable cut-off lengths are possible with score-cut clean ends as required for automatic core loaders. An optional one-color flexographic press is available for product identification. A wonderful new example of PCMCo's *creative* engineering . . . the kind that builds better production answers into converting machines.

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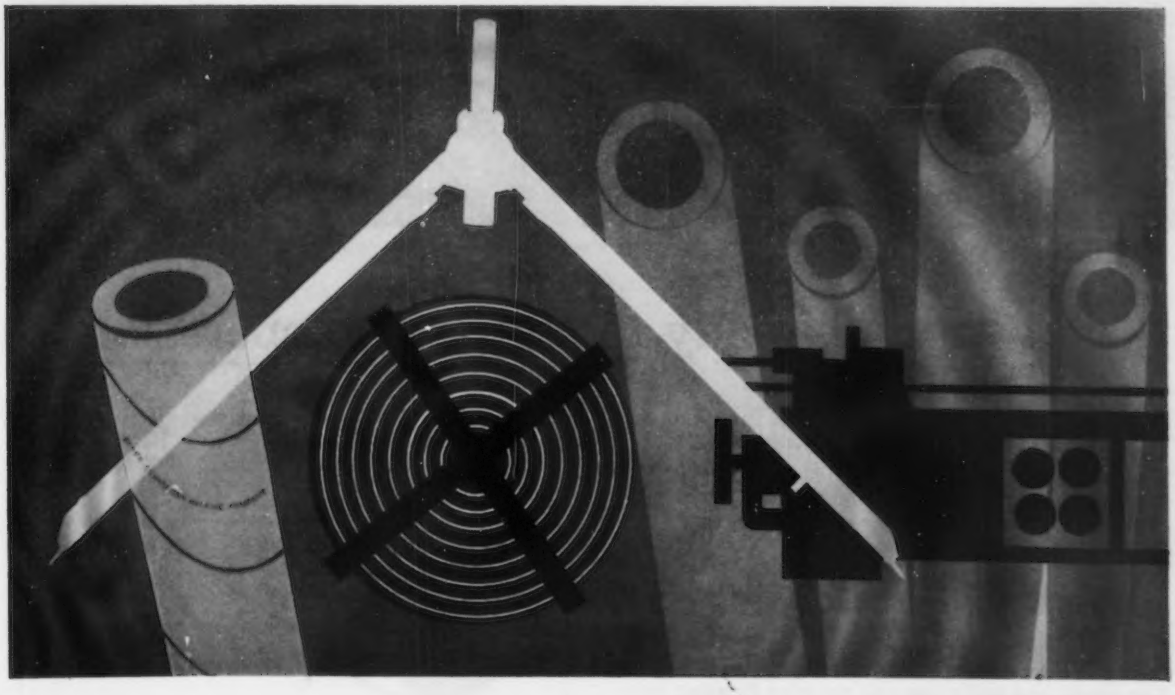

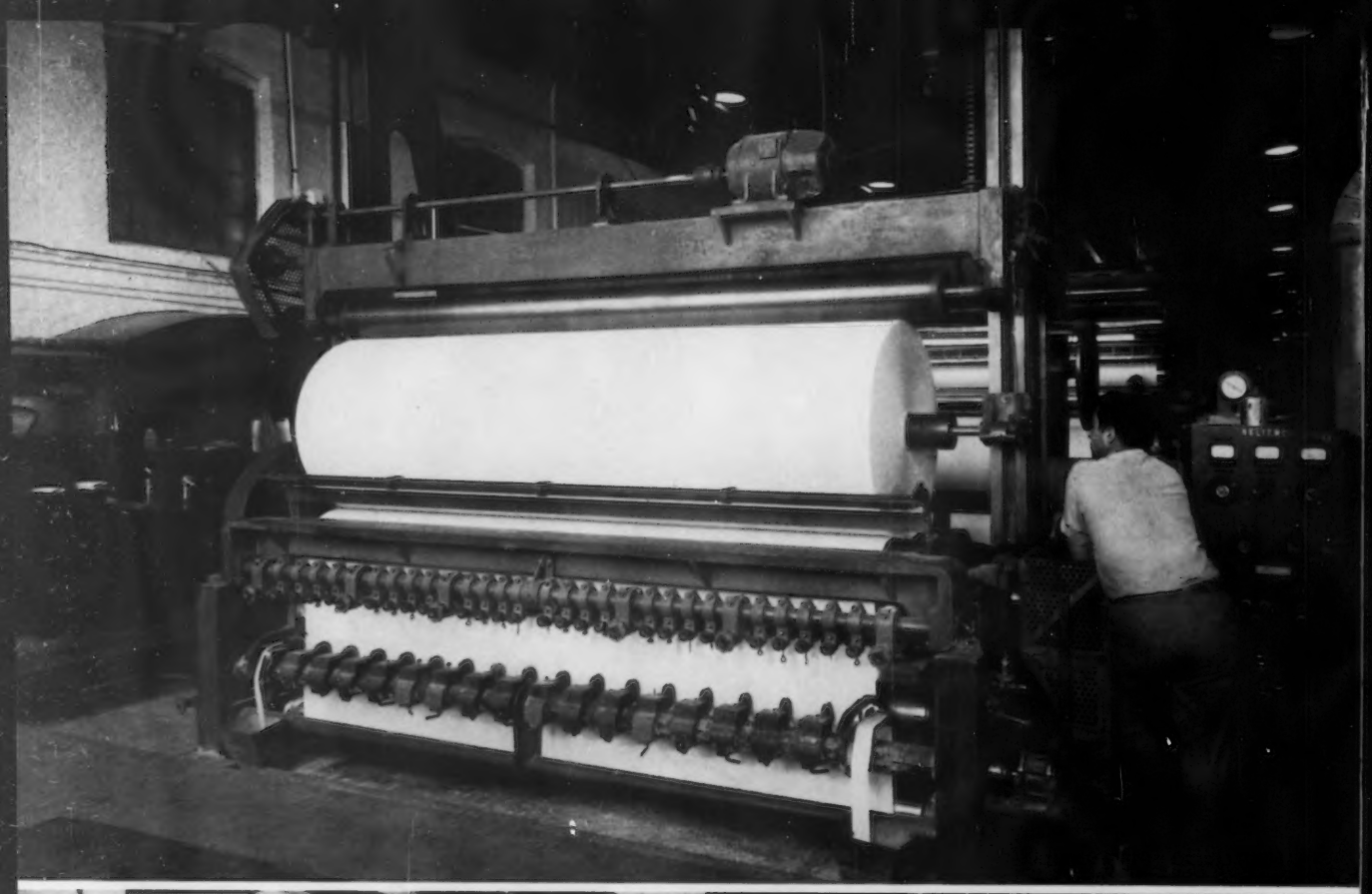

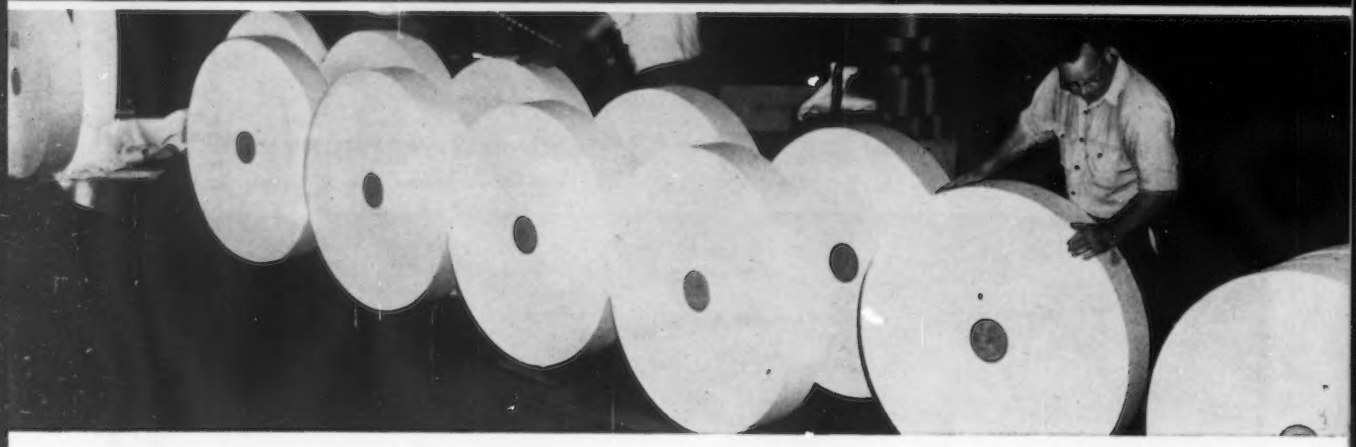

Slit, wound, ready to ship — one operation

These photos show how the Franconia Paper Corporation eliminated a costly rewinding operation.

You're looking at a Kidder 125-inch Master Mill Winder, installed in the Franconia plant as a paper machine slitter-winder nearly three years ago. Since then this high speed, high quality machine has been steadily producing rolls — as narrow as 6 inches, with diameters up to 40 inches — saving time and money every time it goes to work.

If you are producing similar rolls — and still rewinding them as a separate operation — it will pay you to find out how surely and easily you can cut your finishing room costs. Write today to Kidder Press Company, Inc., Dover, N. H. Eastern Sales Office: Empire State Bldg., New York 1, N. Y. Mid-West Sales Office: 400 Washington Bldg., Madison 3, Wis. West Coast Representative: Bojanower Machinery Service Corp., 5270 E. Washington Blvd., Los Angeles 22, California.

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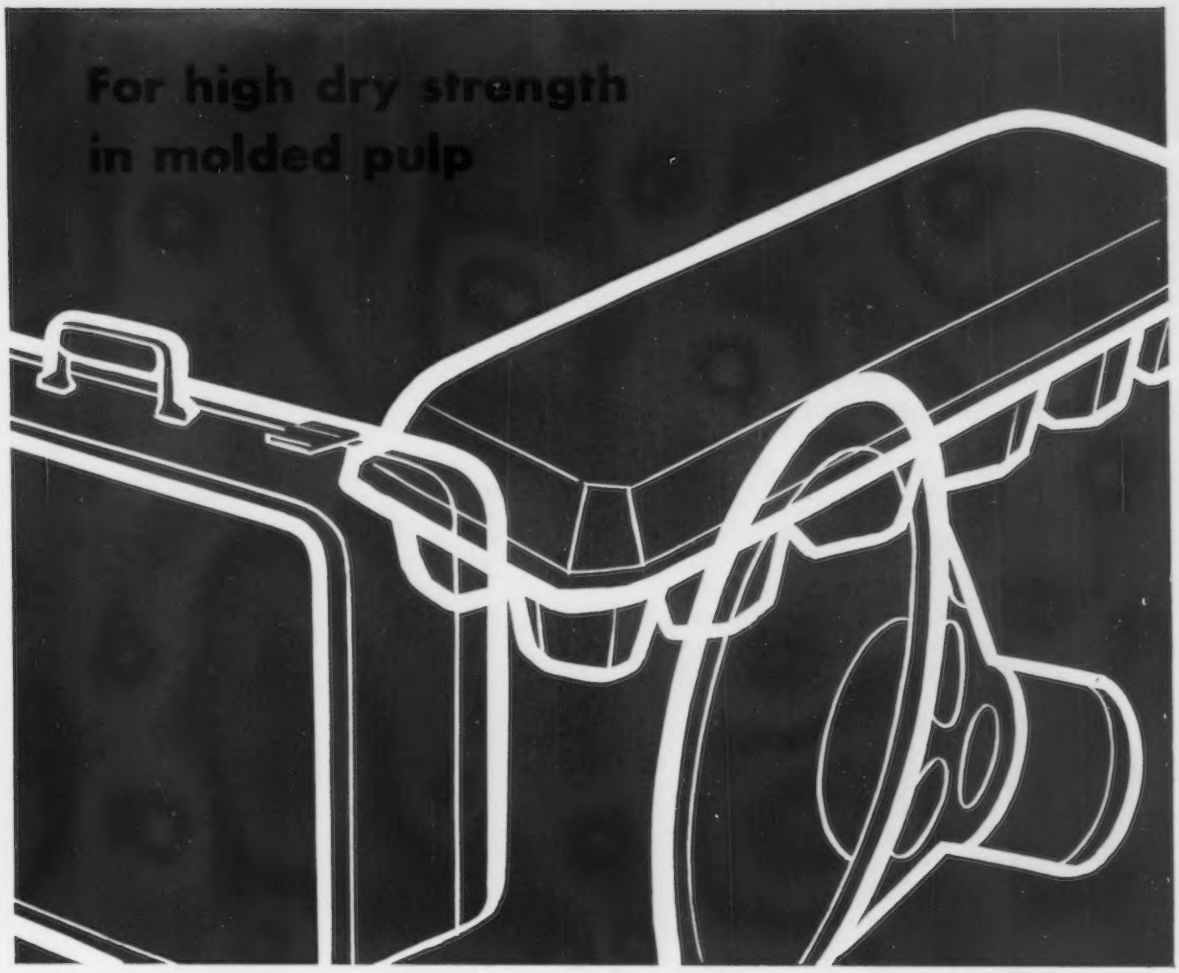
Kidder

Flexoprinter,® Letterpress, and Gravure Presses, Slitters and Rewinders



Shawinigan GELVA® polyvinyl acetate emulsions

When toughness and rigidity are properties necessary in your molded pulp products investigate GELVA emulsions. Substantially increased strength and stiffness can be obtained with relatively small quantities of emulsion. The chart, right, presents data based on laboratory tests performed with three GELVA emulsions representative of Shawinigan's diversified line.

Shawinigan's products for paper applications include both GELVA polyvinyl acetate emulsions and resins and GELVATOL polyvinyl alcohol resins. A wide variety of standard grades is always available. Shawinigan's research staff and laboratories are ready to assist you with formulations for special applications. Write to Shawinigan Resins Corporation, Dept. 7S, Springfield 1, Massachusetts.

	% Resin add-on (dry)	Flexural Strength lbs/in²	Relative Rigidity	Gain in weight 24 hrs water immersion at 25°C.
Control — no resin additive	0	3000	1.00	240%
Gelva Emulsion S-51	10	6330	1.97	115%
Gelva Emulsion C-3	10	5520	1.91	140%
Gelva Emulsion S-55	10	4480	1.43	136%

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GELVA® *polyvinyl acetate emulsions by* SHAWINIGAN RESINS

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Step #1 in the preparation of this "bright white space" is selective mining of prime kaolin clay . . . Step #2 is water washing and fractionation with controlled viscosity and particle size to each papermaker's specification . . . Step #3—drying and large volume storage for prompt deliveries.

And—over 1,000 control tests per day to assure you highest quality Edgar clays.

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Suction couch roll—36″ x 156″.

Specialists in designing and Building Paper Mill Machinery

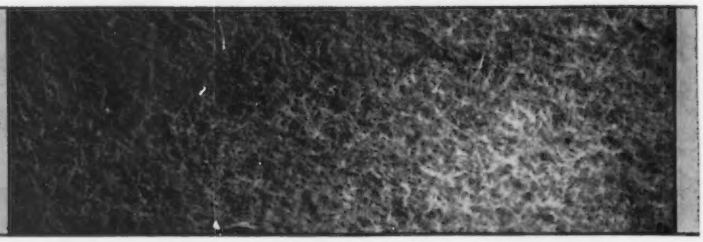
THE Manchester MACHINE COMPANY

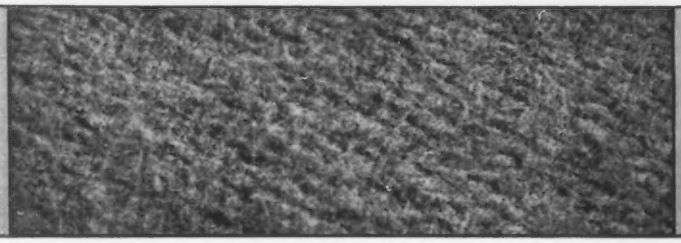
MIDDLETOWN, OHIO

Here's Proof!

BEFORE

This soiled felt is matted and hard, cannot do a good job of water drainage.





AFTER

Washing in d-i LESTOIL has thoroughly cleaned and "opened" the felt and restored the nap.

WASHING WITH D-I LESTOIL INSURES CLEAN, SOFT, POROUS FELTS!

D-I LESTOIL LIQUID DETERGENT is ideal for washing felts — on or off the machine. A special formulation, combining wetting, penetrating and cleansing agents, it removes all types of soil and contaminants which plug the felt, impair drainage and shorten felt life.

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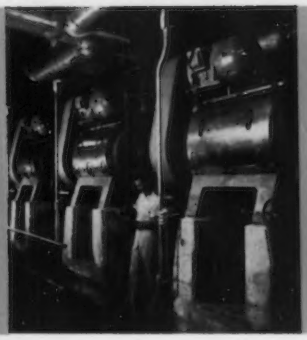
Everything's under control at Buckeye



UNIQUE CONTROL SYSTEM ASSURES HIGHEST QUALITY KRAFTS

It takes more than routine sampling and standard controls to produce outstanding kraft for today's paper industry. At Buckeye, highly specialized equipment and advanced statistical methods maintain desired pulp specifications within extremely narrow limits. A pneumatic tube system shuttles samples of stock-in-process to plant laboratory for detailed analysis. Written operating instructions cover every pulp, every stage, every process condition. Nothing is left to chance.

For highest quality krafts today, tomorrow, and in the years to come, contact Buckeye . . . the market pulp producer with everything under control.

BUCKEYE CELLULOSE CORPORATION

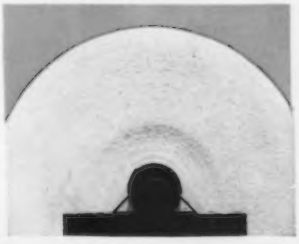
Memphis 8, Tennessee

Wood pulp plant at Foley, Florida

Cotton linters plant at Memphis

BUCKEYE PULP

Bleached Kraft



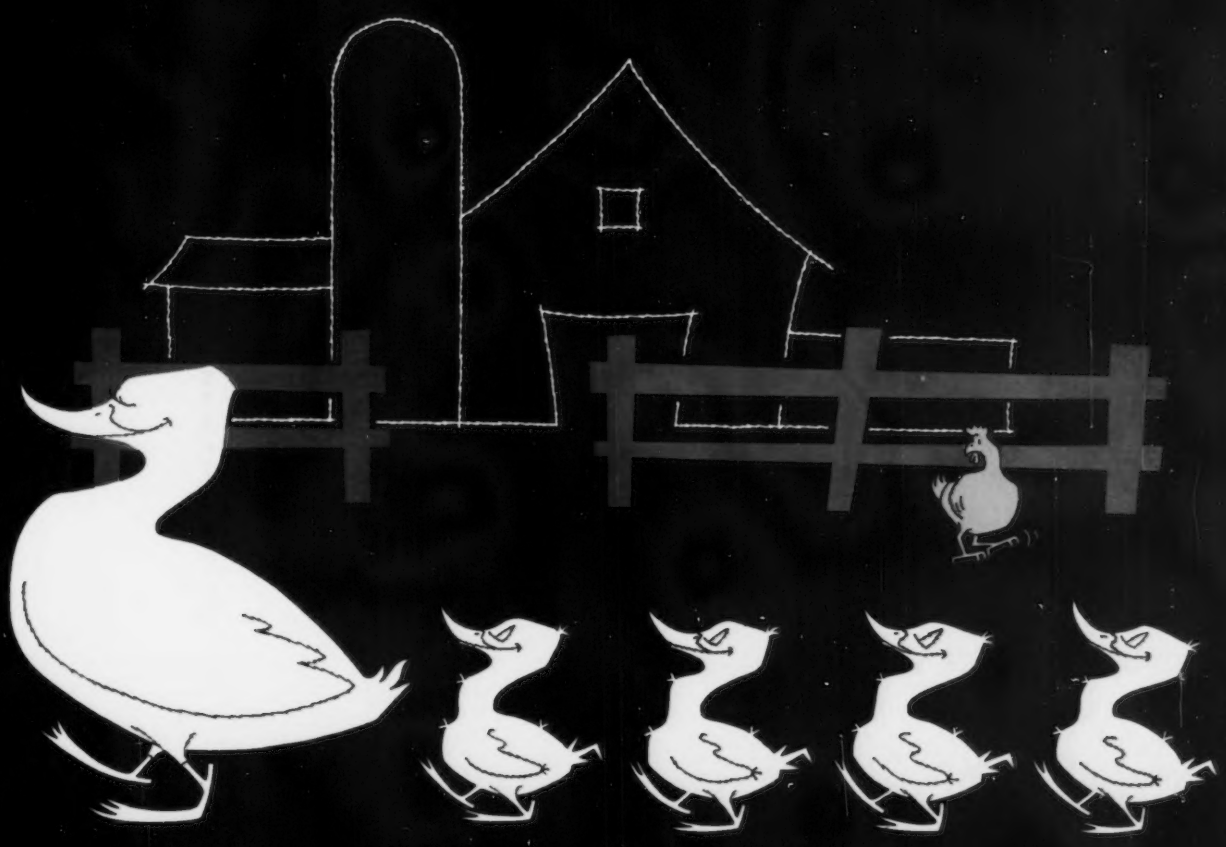
For good boxboard mix good materials with good refining

Bauer Pump-Through Refiners help Federal Paper Board Company, Inc. meet its customers' demands for better packaging materials. Use of these refiners on virgin pulp and secondary fibers for liner stock preserves fiber length and produces a stronger, freer draining, better forming furnish. The result: a good boxboard with high sales appeal. For firsthand information on how Pump-Through Refiners can help in your mill, call your Bauer representative.

THE BAUER BROS. CO.

SPRINGFIELD, OHIO

One of the two Bauer 32-inch Pump-Through Refiners working on top liner stock at Federal's Mill at New Haven, Connecticut.



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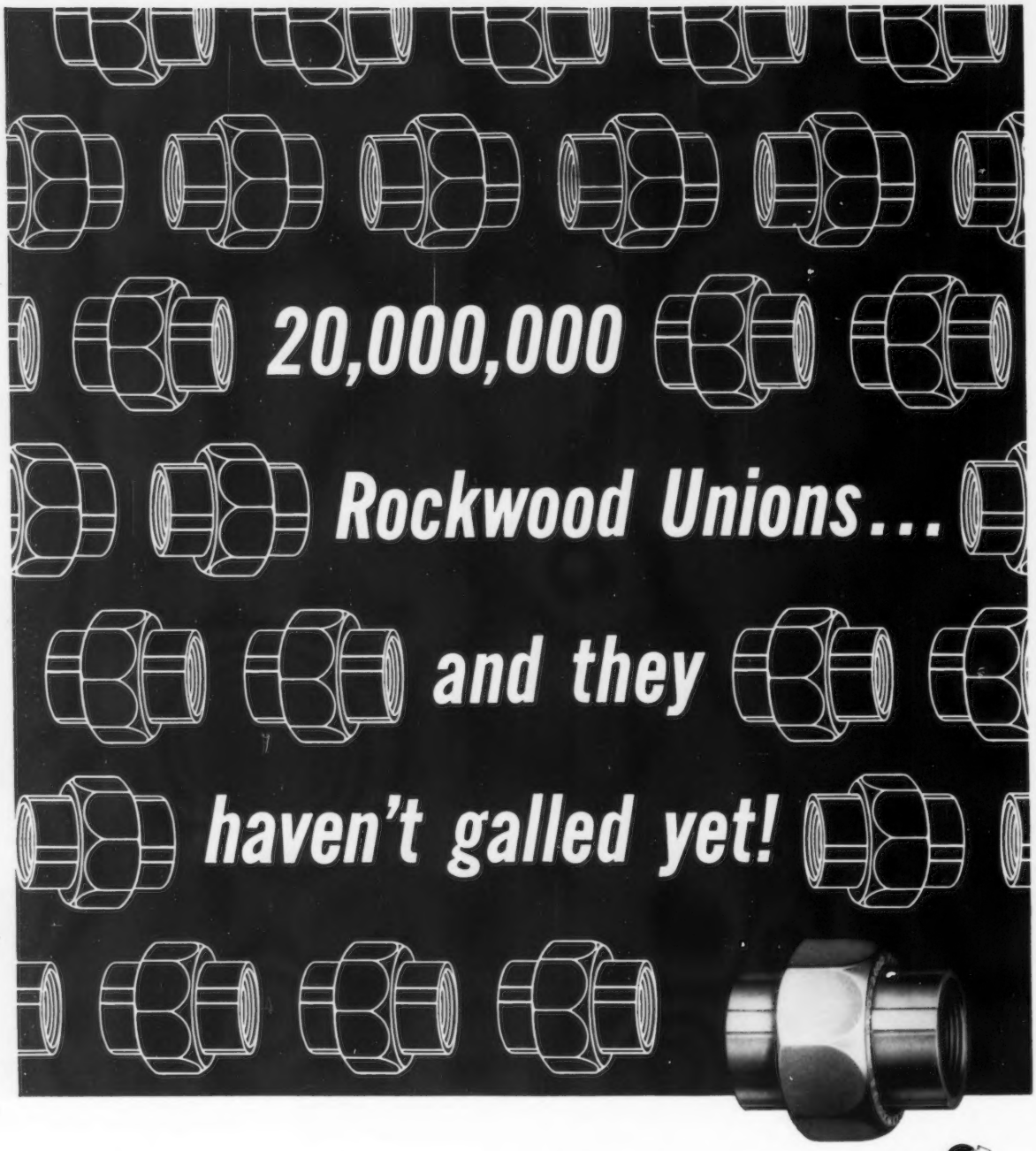

Only ROCKWOOD Cold Forged Steel Unions have the hardness differential which *assures* fast, easy make-up, a tight seal, and free from galling. Male seat is heat-treated to a hardness substantially higher than that of the female seat. Then both seats are forged in place and double-locked under 100,000 and 400,000-pound pressures. Other outstanding features include: special color-coding for immediate identification. Rockwoodizing which gives all surfaces *positive* protection against corrosion, interchangeable parts. Get complete information now. Write for facts.

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Trends

West Virginia's President Luke Predicts

We can reasonably look forward to an increase of more than 40% in physical output and consumption of paper during the next ten years states David L. Luke, president, West Virginia Pulp and Paper Co. Mr. Luke predicts that capital expenditures by the paper industry during the 1960's will average close to $1 billion per year. He also forecasts that investment, pricing and profit performance of the industry during the '60's should be less subject to irregularities than in the past.

Pulp Exports Holding Big Gains

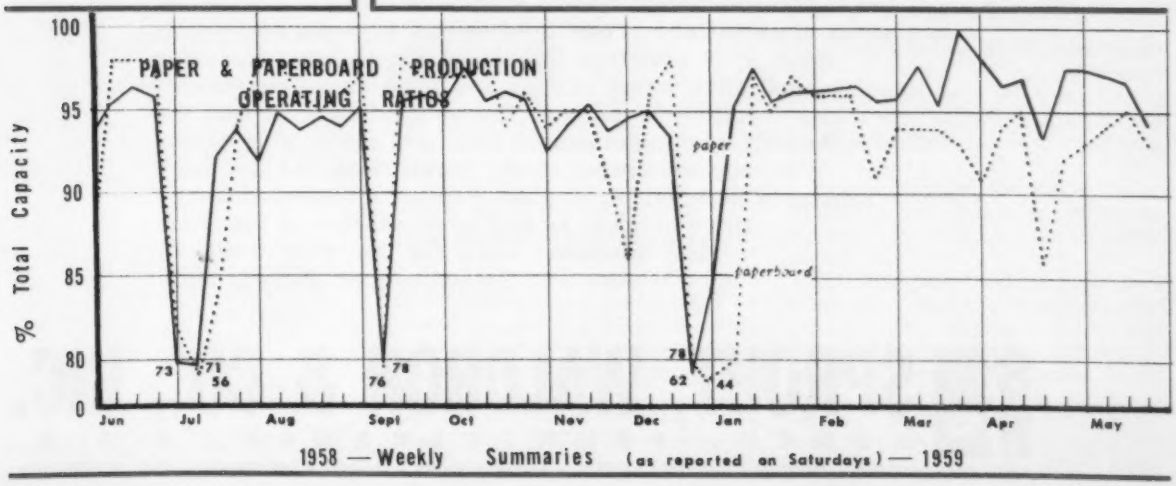
U. S. wood pulp production in April was 5% ahead of April last year according to the U. S. Pulp Producers Ass'n. For the year to date output is up 8%. Domestic shipments of market pulp are up 2% for both the month and the period. Pulp exports are up 89% and 80% respectively.

Profit Margins Still Lagging Behind Sales

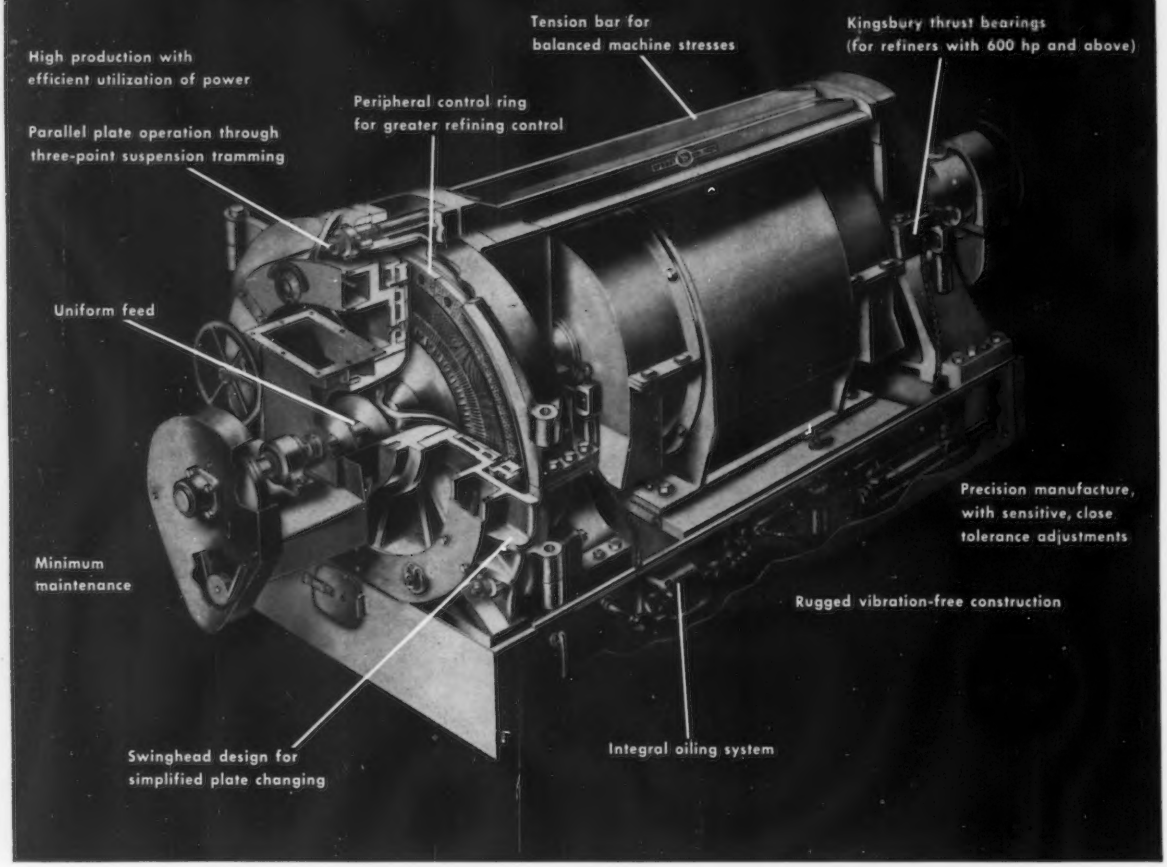
Paper and paperboard production is registering big gains over 1959, itself a period of new highs in industry output. But profit margins, The Value Line Investment Survey states, leave something to be desired—namely, price increases to offset the sizeable cost inflation of recent years. Per capita use of paper, the Survey continues, still shows a firm growth trend. But price adjustments to date have been made most cautiously. Moreover, wages will rise 4% this year as the result of contracts signed in 1959. Thus, benefits from any price increase, the Survey remarks, have been partially sapped in advance.

Newsprint Productive Capacity Tops Demand

World newsprint productive capacity is continuing to run ahead of demand states the Forest Products Division, BDSA, U. S. Department of Commerce, in a report to be published in next week's issue. It notes that the United States has built up its domestic newsprint capacity in the past several years, principally in the Southern States. Imports—largely from Canada—still are the major source of supply however, approximating 75%.



11 POINTS OF SUPERIORITY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Tension bar for balanced machine stresses
Kingsbury thrust bearings (for refiners with 600 hp and above)
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Uniform feed
Precision manufacture, with sensitive, close tolerance adjustments
Minimum maintenance
Rugged vibration-free construction
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Integral oiling system

THE WORLD-FAMOUS 36-2 "SPROUT"

single disc precision pulp refiner

The 36-2 Sprout refiner is the most efficient disc refiner in quantity of output and in quality of refined pulp per horsepower input. It is preferred throughout the industry for every pulping application where rubbing and brushing action, without cutting, is required. Sprout-Waldron units lead the field in the refining of semichemical pulp, cold caustic pulp, screen rejects, wastepaper stock; brown stock and hot stock refining of high yield kraft pulp; refining of bagasse, flax and straw pulping; as well as preparation of insulation and hardboard fiber. For the latest details on the 36-2 Sprout, request Bulletin 96-B.

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PAPER TRADE JOURNAL

WEEK OF JUNE 13, 1960

Southwest Names Project Engineer For Construction of Snowflake Mill

Southwest Forest Industries, Inc., has named James A. Hutchison of Seattle, Wash., as resident and project engineer for construction of the firm's pulp and paper mill near Snowflake, Ariz., it was announced by J. B. Edens, Southwest's president. Mr. Hutchison is presently senior representative to the pulp and paper industry for Howard S. Wright Co., largest industrial construction contractor in the Pacific Northwest.

Mr. Hutchison was in charge of construction for the pulp mill recently completed at Sitka, Alaska, by the Alaska Lumber & Pulp Co. He also served as head office engineer during construction of the mill built at Ketchikan, Alaska, by the Ketchikan Pulp Co.

Southwest officials have set January 1, 1962, as the target date for the beginning of kraft paper operation and March 1, 1962, as the date for the beginning of newsprint manufacture at the company's new $40 million mill near Snowflake.

The mill, located near the largest single stand of Ponderosa pine in the United States, will have a capacity of 75,000 tons of newsprint and 65,000 tons of kraft paper per year. A contract with the Hearst Corp. calls for the delivery of 50,000 tons of newsprint each year for 20 years to Hearst papers in the Los Angeles area. The remaining 25,000 tons will be offered to papers in Arizona and New Mexico.

Raw materials for the new mill will come from sawmill waste at the company's lumber operations at McNary and Flagstaff and from the harvesting of pulpwood under a 30-year contract with the Forest Service. The pulpwood harvesting area covers more than 1½ million acres in Arizona and New Mexico.

Paper and Paper Board Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending May 28, 1960, at 94.1 per cent compared with 97.1 per cent, revised for the preceding week. The ratio was 91.9 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending May 28, 1960, at 93 per cent, compared with 95 per cent for the preceding week and 97 per cent for the corresponding week a year ago.

(Detailed statistics on page 62)

Union Bag Rebuilding No. 3 Machine at Savannah

A contract for rebuilding the fourdrinier of No. 3 paper machine in the Savannah, Ga., mill has been awarded by Union Bag-Camp Paper Corp. to the Black-Clawson Co. The No. 3 machine manufactures kraft bag paper in the 40 to 60 pound range at an average rate of 180-200 tons per 24 hours.

The new unit will be a 236-inch wide Hydroflyte cantilever fourdrinier designed for quick wire change. Among its special features will be the new Uni-Flyte air-operated wire guide.

Mc B & PR Arizona Mill Still Under Consideration

According to the State of Arizona Development Board preliminary negotiations are continuing to establish the feasibility of construction of the newsprint mill in that state by Macmillan Bloedel and Powell River Co. The site under consideration is near Flagstaff. Power and pulpwood supply appears to present no serious problems. Water supply is now being investigated.

In an effort to develop a million gallons of water a day, the company began drilling the first of a series of ten wells near the proposed mill site.

A spokesman for the company said it is hoped enough information will be gained from the first well to determine the cost of producing the necessary quantity of water.

Wausau Paper Mills Not to Be Sold

David B. Smith, president of Wausau Paper Mills Co., at Brokaw, Wis., has issued the following statement: "Contrary to any rumors circulating in the paper trade, Wausau Paper Mills Co. is not being purchased by The Standard Packaging Corp. nor are there any negotiations in process to purchase the company by The Standard Packaging Corp. or by any other company."

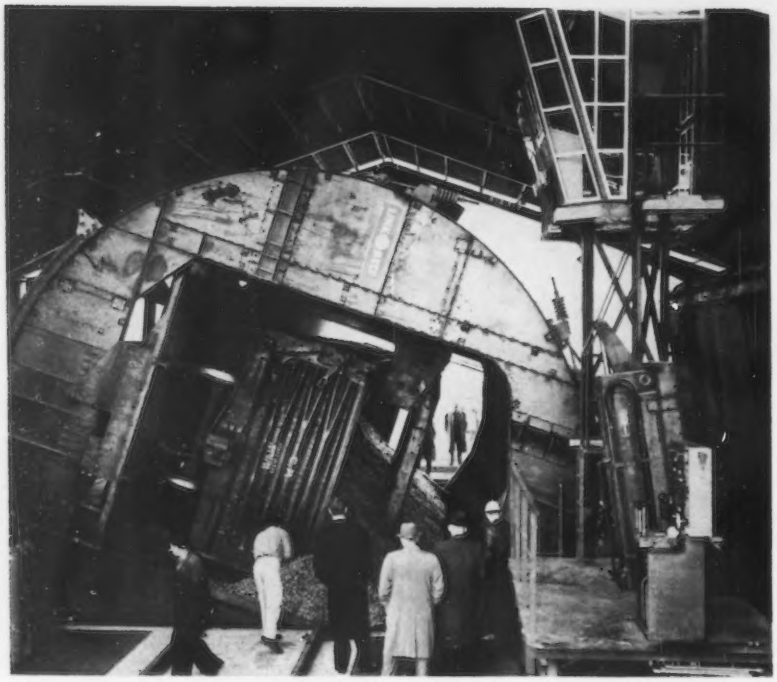
This rumor has been growing in the trade for several months and Wausau Paper Mills has only recently uncovered the source. Consequently, the company now finds it necessary to issue a public denial.

New Coating Plant Planned For Wisconsin Rapids

A new coating preparation plant will be erected at the Wisconsin Rapids Division of Consolidated Water Power & Paper Co., according to H. P. Baldwin, vice president, manufacturing.

Engineering for the million dollar project is now in progress with construction expected to begin this summer.

The new plant will be built as a three-story steel and aluminum addition over the company's train building in Wisconsin Rapids and replace existing coating preparation facilities. Carbonate as well as starch and clay will be handled in bulk in the new plant which is scheduled for completion by the end of the year.



WOOD CHIPS in open-top gondola cars are unloaded by inverting the entire car in this giant drum. Termed "satisfactory" by Crown-Zellerbach Canada officials who are shown viewing a trial run, the new installation is located in Port Moody, Vancouver, B. C. Cars with specially modified high sides each hold 26 units or about 50 tons of chips. To unload, cars are clamped into place before the entire unit—track, car, and cargo—is rotated. Chips pour onto conveyor belt feeding into a spout that delivers them into a scow or ship's hold. The facility will unload 20 to 25 cars per hour automatically. C-Z Canada will use the installation to transship annually about 50,000 units of chips brought in from sawmills in the interior of B. C. for use in the company's pulp mills.

Tugela Mills Plan to Double Production

A £4,000,000 plan to double production at the Tugela Mills in Zululand is part of South African Pulp and Paper Industries, Ltd.'s, expansion program over the next few years, aimed at boosting sales of products from the £7,000,000 achieved last year to an estimated £13,000,000 in 1965.

The Tugela expansion has been made possible by a recently concluded long-term agreement under which the South African Forestry Department will supply pine pulpwood

The expansion at Tugela hinges on the installation of a 209-inch wide paper machine which is already on order and should be in operation by 1963.

S.A. Forests Investments, Ltd., will supply pine pulpwood for the newsprint venture due to start in the first quarter of next year at the Enstra Mills at Springs near Johannesburg. S.A. Forests and Sappi are linked with the Union Corporation Group of Companies which have big gold mining and forest interests in South Africa. One of the leaders in this group is Charles Engelhard, the New York magnate.

Canadian Paperboard and Pulp Output Up Sharply

Canadian paperboard production, consumption, and exports increased sharply in April and also during the first four months of the year.

Output of the mills in April was 76,511 tons as compared with 69,083 tons in April 1959, and 65,517 tons of paperboard were used in Canada in April as against 62,547 tons a year ago.

Total output for the year to date was 322,149 tons as compared with 283,359 tons a year ago. Consumption in Canada for the year to date was 276,224 tons as compared with 255,331 tons in 1959.

Paperboard exports in April were 9,877 tons as compared with 5,147 tons in 1959. For the year to date exports totalled 32,239 tons as compared with 21,608 tons in 1959.

PULP

Production, consumption, and exports of pulp in Canada in April and for the year to date were all higher than in 1959.

April's pulp production totalled 904,800 tons as compared with 892,102 tons in 1959. Pulp used in Canada increased from 683,799 tons in April 1959 to 700,264 tons this year. April exports were 208,362 tons as against 202,074 tons a year ago.

For the year to date, pulp production increased from 3,370,598 tons a year ago to 3,650,148 tons this year. Pulp used in Canada increased from 2,580,482 tons during the first four months of 1959 to 2,795,496 tons this year. Exports of pulp up to April were 827,767 tons as against 763,126 tons a year ago.

RAYONIER has recently planted its 100,000,000th pine seedling on its lands in the Southeast. Rayonier's statisticians say that if all these seedlings had been planted in one continuous row at normal eight-foot intervals they would reach 151,515 miles, or over six times around the earth at the equator.

Four-year old Jan Miller, daughter of area forest supervisor W. F. Miller, plants the 100,000,000th seedling from a planting machine. Assisting her is A. G. McArthur, resident manager of the company's Southeast Timber division. First plantings in 1938 were at an annual rate of 100,000 seedlings. Five years ago, the planting rate was stepped up to over 15,000,000 seedlings a year.

There's a BIRD-JONSSON SCREEN on the job in a North American mill for every dot in the above space

Bird-Jonsson Screens subject the stock to intense but controlled vibration while it travels over specially shaped, perforate plates. Capacity is large, screened stock comes clean, rejects are free of good fibres, power is as little as .06 HP per ton.

Bird-Jonsson Screens are recommended for knotting, bull screening, tailings screening, taking the knots and chips out of black liquor ahead of brown stock washers, screening waste stocks ahead of fine screens, screening straw stocks and stocks from refiners, defibrators or masonite guns.

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Canadian Manufacturers of Bird Machinery
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PAPER PEOPLE

Guenter Herwig

Finch, Pruyn, Names Technical Director

Finch, Pruyn and Co., Inc., Glens Falls, N. Y., paper manufacturer, has announced the appointment of Guenter Herwig as technical director.

Born in Nuremburg, Germany, Mr. Herwig was graduated from the O. V. Miller Polytechnic Institute in Munich. After serving as project engineer for pulp and paper mills in Europe, he joined Finch, Pruyn in 1955 as a technician in the development laboratory. He was promoted to development engineer in 1958.

Abitibi Manager of Purchases Retires

R. J. Askin, executive vice president (development, engineering & services) Abitibi Power & Paper Co., Ltd., has announced the retirement of M. G. Farquhar, manager of purchases, and the appointment of Gerald D. Ryan to the same office, effective June 1.

Flores Named Acting Supt. At Riegelsville Mill

Riegel Paper Corp. has named Richard W. Flores to the position of acting superintendent of its Riegelsville (N.J.) mill replacing George Suydam who resigned. Mr. Flores was Upper Mills quality control supervisor.

William Heine will assume Mr. Flores's former position.

Vanatta Retires From Nekoosa-Edwards Post

J. K. Vanatta, a 31-year veteran with Nekoosa-Edwards Paper Co., retired June 1. Formerly manager of purchases for the company, Mr. Vanatta has served in the capacity of purchasing advisor for the past two years.

A native of Colorado, Mr. Vanatta came to Nekoosa-Edwards in August 1929 as an industrial engineer. From 1931 to 1933 he served as purchasing agent, and then was assigned to industrial engineering projects including paper development, production scheduling and planning. In 1950 he was named manager of purchases, retaining his responsibilities for scheduling and planning. In 1955 separate departments for scheduling and planning were established, and he continued as head of the purchasing department until July 1957.

U. S. Gypsum Appoints Chicago Division Buyer

Frederick Moeller, Jr., United States Gypsum Co., has been appointed division buyer, Packaging and Foil, at Chicago.

A graduate of Rutgers University, Mr. Moeller joined United States Gypsum in 1955 as machinery and supplies buyer at Chicago, going to South Gate, Calif., in 1957 as a buyer, and returning to Chicago in 1958. In 1959 he transferred to Toronto as construction buyer for the Hagersville expansion, finally becoming assistant to the purchasing agent.

Shaver Resigns Post At Alton Box Board

R. W. Shaver has announced his resignation as vice president in charge of manufacturing of the Alton Box Board Co. at Alton, Ill.

Mr. Shaver is well known in the industry and has had a very broad and successful experience building and operating paper mills in the United States and Canada. The Quebec North Shore Paper Co. development for the Chicago Tribune and New York Daily News at Baie Comeau, Quebec, and the rehabilitation of the Gould Paper Co. at Lyons Falls, N. Y., are two of many projects he has been responsible for.

He will make his headquarters at his farm home at Dover Plains, N. Y., and plans to do general paper mill management consulting work and devote more time to his general interests in the east.

P. J. Noel

Wausau Paper Announces Four Promotions

Wausau Paper Mills Co., Brokaw, Wis., announces several manufacturing and sales personnel appointments.

P. J. Noel has been promoted from superintendent of finishing and customer service to sales service and converting sales; Richard Jacobus, from technical assistant to the paper mill superintendent to assistant paper mill superintendent; Charles Rainville, from finishing room supervisor to finishing room superintendent; and LeRoy Strek to the finishing room supervisory staff.

Mr. Noel had extensive printing production experience prior to joining Wausau in 1954. Mr. Jacobus, before joining Wausau in 1957, worked at the Institute of Paper Chemistry and with The Eastern Corp. Mr. Rainville has served in various production and finishing capacities at Wausau since starting with the company in 1947. Mr. Strek has worked in the finishing room since starting employment with the company in 1949.

Owen to Retire from Latex Fibre Post

After completing 41 years of service with the United States Rubber Co. and Latex Fiber Industries, Inc., Beaver Falls, N. Y., 27 years as general manager and the last two years as vice president of Latex Fiber In-

dustries, A. F. Owen is retiring.

Mr. and Mrs. Owen will leave around the first of July for a months' trip to Switzerland. Mr. Owen has accepted an assignment as scientific advisor with the Fiber Products Research Center, Inc., Beaver Falls, and will continue his residence there.

C. J. Fisher

Wyomissing Elects V-P of Manufacturing

Charles J. Fisher has been elected vice president of manufacturing by the Wyomissing Paper Products Co. of Reading, Pa., a division of the Narrow Fabric Co.

Mr. Fisher joined Wyomissing in 1956 as engineer for the design, construction and operation of the company's new plant in Tuckerton, Pa., and in 1958 was named manager of the plant. The new plant, which was put in operation in 1959, features the most modern paper coating and handling equipment in the industry.

A 1946 graduate of Massachusetts Institute of Technology with a degree in mechanical engineering, Mr. Fisher was formerly assistant chief engineer for the Hamilton Paper Co.

Brown Co. General Sales Manager to Retire

Gilford F. Henderson of Watertown, Mass., general sales manager of Brown Co.'s paper and paper products division, will retire on August 1 after 43 years of service with the northern New England pulp, paper and forest products firm.

Mr. Henderson, who was born in Portland, Me., where he attended Gray's Business College, joined Brown in 1917 as order clerk and became manager, paper sales division, in 1936. In 1945 he was appointed sales manager, paper and paper towel division, and held this position until 1954 when the two divisions were split.

Gerace To Manage St. Regis Bucksport Mill

St. Regis Paper Co., announces the appointment of Thomas Gerace as resident manager of the company's printing paper mill at Bucksport, Me.

He replaces Fred C. Goodwill who has resigned from the company. Mr. Gerace has been serving as resident manager of the company's printing paper mill at Sartell, Minn.

J. P. Corbin, who has been assistant to the general manager of the Printing Paper Division, will replace Mr. Gerace as resident manager at the Sartell mill.

Both appointments are effective immediately. Messrs. Gerace and Corbin will report to L. J. Smith, general manager, Printing Paper Division.

Mr. Gerace joined St. Regis in 1930 as bleach plant superintendent at the company's Deferiet, N. Y., mill. He has served in various capacities at Deferiet, and was pulp mill superintendent there when he was transferred to Sartell as resident manager in 1958.

Mr. Corbin joined St. Regis in 1955 as a pulp development engineer at Deferiet. He held various engineering positions in St. Regis' New York office and Jacksonville mill until returning to Deferiet in March 1960 as assistant to the general manager of the Printing Paper Division.

Gilman Paper Announces Executive Changes

Howard Gilman, executive vice president of Gilman Paper Co., manufacturer and converter, with mills and plants at St. Marys, Ga., and Gilman, Vt., has announced the following changes in its executive and sales personnel, effective June 1:

Harry C. Lawless becomes a staff vice president and a member of the executive advisory committee.

Dean Wellington becomes general sales manager with authority over the sales of the following divisions:

Standard Products Division—William Peist, sales manager;

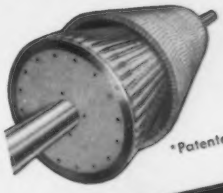
Specialty Papers & Pulp Division—Robert Bringman, sales manager;

Multiwall Bag Division—Edward Burgers, Jr., sales manager.

Tom L. Jones, formerly vice president and director of multiwall sales of Arkell & Smiths, and recently regional sales manager of the Multiwall Division of West Virginia Pulp and Paper Co., has joined Gilman and becomes special representative in the Multiwall Bag Division.

St.Regis PAPER COMPANY

Join the parade of leading mills saving money with JONES ADAPTA-PLUG* and FULBAR FILLINGS



*Patented

Jones

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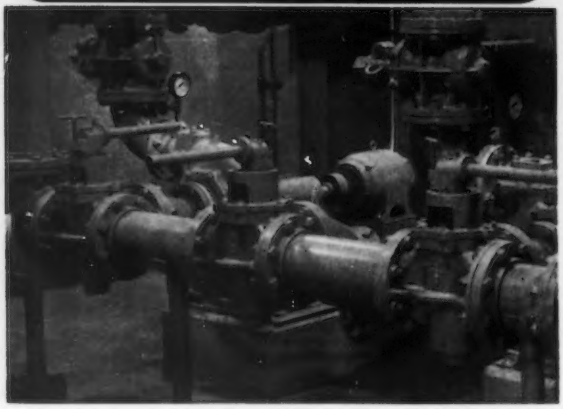

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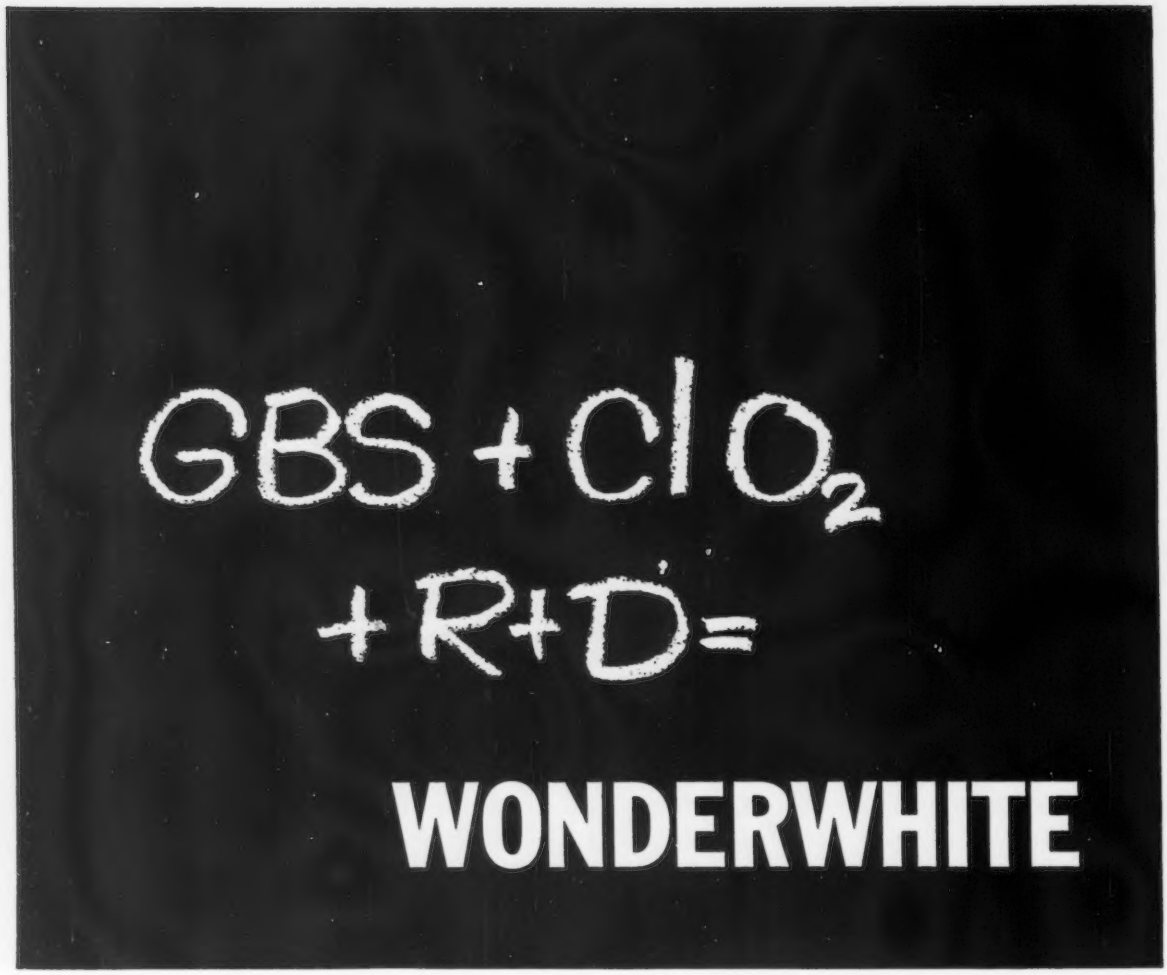

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PJT NEWS OF CONVERTERS

Flintkote Plans Container Plant in Mississippi

The Flintkote Co. a major producer of corrugated containers and building products, has announced plans for a new corrugated container plant to be built at Magnolia, Miss.

Subject to approval of a bond issue by voters of Pike County to finance construction of the plant, Flintkote will lease the facility on a long-term basis from the State of Mississippi. The project is scheduled to be built and financed under the state's BAWI development program.

The plant, to be located on a 15-acre tract on the outskirts of the city of Magnolia, in Pike County, in the southern part of the state, will be outfitted by Flintkote with over $1 million worth of machinery and equipment. The single-floor plant will occupy about 115,000 square feet. It is designed to provide for future expansion when necessary.

Flintkote has a total of 85 plants and mills, located throughout the United States, and in Canada, England and France. Included in this total are seven plants operated by the Hankins Division. Besides producing containers, Flintkote manufactures composition floor coverings, industrial lime, portland cement, adhesives, paving and other industrial products and the broadest line of building materials in the United States.

IP Fills Posts at New Single Service Div. Plant

Appointment of Robert J. Stewart, Jr., as resident manager of International Paper's new Single Service Division plant at Versailles, Ky., has been announced.

At the same time the appointment of James V. Horton as plant superintendent for the new facility was announced. The plant will be completed this summer and will make Pure-Pak paper milk containers.

Mr. Stewart joined IP in 1953 as a sales representative in the Minneapolis area. He most recently has been covering the Chicago territory. Mr. Stewart attended Dartmouth College and New York University.

Mr. Horton came to Single Service in 1951 as a gluing machine operator at the Kansas City plant where he was shift superintendent until his promotion.

Mengel Names Miller 9-Plant Superintendent

Cough W. Miller has been appointed general superinendent of the nine plants of the Mengel Co.'s corrugated box division. The plants are located in Kentucky, New York, New Jersey, Tennessee and North Carolina.

Mr. Miller will retain his residence and office in Winston-Salem, where he has been associated with the Mengel Co. for 37 years. Since 1937 he has been superintendent of the local plant of the corrugated division.

Georgia-Pacific Plans New Converting Plant

Georgia-Pacific Paper Co. has disclosed plans to enter the corrugated box manufacturing field in the Pacific Northwest.

In making the announcement, Robert E. Flowerree, president of Georgia-Pacific Paper, stated, "Economists forecast that per capita demand for kraft pulp, paper, and containerboard products will nearly double in the next decade. Georgia-Pacific is now completing a multi-million dollar expansion program at the corporation's present kraft paper and containerboard plant at Toledo, Ore., which will increase capacity from 350 tons daily to over 600 tons daily. The entry of Georgia-Pacific into the converting field is a further step toward maximum utilization of the corporation's extensive timber ownership and the further integration of its manufacturing facilities."

Georgia-Pacific Paper Co. is presently making extensive surveys to determine a suitable Northwest site for the new converting plant. Factors being considered include proximity of suitable markets for corrugated packaging (such as food and beverage distribution, agricultural products, and a wide variety of industrial applications), availability of semi-skilled labor, and access to rapid transportation. It is anticipated that the new plant will encompass about 100,000 square feet of building space and will include the latest high speed combiners and a full range of corrugated box making machinery. Employment figures have not been finally determined but preliminary estimates indicate requirements will be substantial.

"I thought you were familiar with the paper converting business."

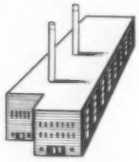
Felt Facts

PRODUCTION RECORDS BROKEN AGAIN WITH ALBANY FELTS!

NEW FELT GIVES EXCELLENT FINISH!

The Actual CASE HISTORY

To improve finish and at the same time extend felt life is an almost impossible feat in mills making white patent coated board and suit box board. But Albany Felt Designers have done just that for a large mill in Illinois. Working closely with the board mill superintendent, they designed a new felt for the top position on one of the machines. He reported that the finish obtained from this felt was **excellent throughout its longer life.** This is a real accomplishment in a mill where finish requirements are very strict.



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Talk it over with your Albany Felt Sales Engineer

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The World's Largest Manufacturer of Paper Machine Felts

The four specialists of the panel discussion of EUCEPA: C. A. Bicking and D. Macaulay from USA, W. Masing from Germany and A. F. Tout from UK.

Statistical Methods Discussed At the EUCEPA Symposium

EUCEPA (Comité Européen de Liaison pour la Cellulose et le Papier) is an association of European paper engineers' associations. It was established in 1956 to promote technical and scientific co-operation in the chemical pulp and papermaking fields.

Three meetings dealing with special questions have already been held by EUCEPA. The topic in Darmstadt in 1958 was cellulose analysis, in Noordwijk in 1959 straw pulp, and in Paris in 1959 the printability of paper. This time it was Finland's turn to be host, and the theme was application of statistical methods in the manufacture of pulp and paper.

The symposium, which was organized by the Finnish Paper Engineers' Ass'n., was held on May 16-18 in Helsinki. It was attended by nearly 200 experts, domestic and foreign. The congress program was divided into three sections: control of statistical quality, experimental design and testing of the final product.

The opening address of the symposium was delivered by Professor Waldemar Jensen, president of EUCEPA and managing director of Oy Keskuslaboratorio—Centrallaboratorium Af (The Finnish Pulp and Paper Research Institute) who said: "Industrial production presupposes everywhere the control of both the production process and quality control of the final product. The aim is to perform this task with the greatest possible efficiency and the smallest possible labor input. Statistical methods have proved very serviceable and valuable in trying to achieve this aim. It may indeed be said that the introduction of statistical methods in the chemical pulp and paper industry has led to entirely new thinking in the supervision and control of the production process." Professor Jensen also mentioned that the questions to be discussed are of interest to both manufacturers and buyers of paper and chemical pulp.

Quality Control

It was stated in the first section of the congress, the Quality Control Section, that statistical quality control began in the 1920's at the Bell Telephone Co. in the USA. It developed rapidly during the war when quality had to be guaranteed with the minimum of labor. The application of statistical quality control is faced with difficulties in the paper and chemical pulp industry owing to the complicated nature of the manufacturing process. The benefit when quality becomes more even and is better controlled is difficult to estimate in terms of money, but the results are appreciated.

The lectures given in the Quality Control Section were as follows:

I. F. Hendry, UK: Application of Quality Control Techniques in the Finishing End. (Read by J. Newman).

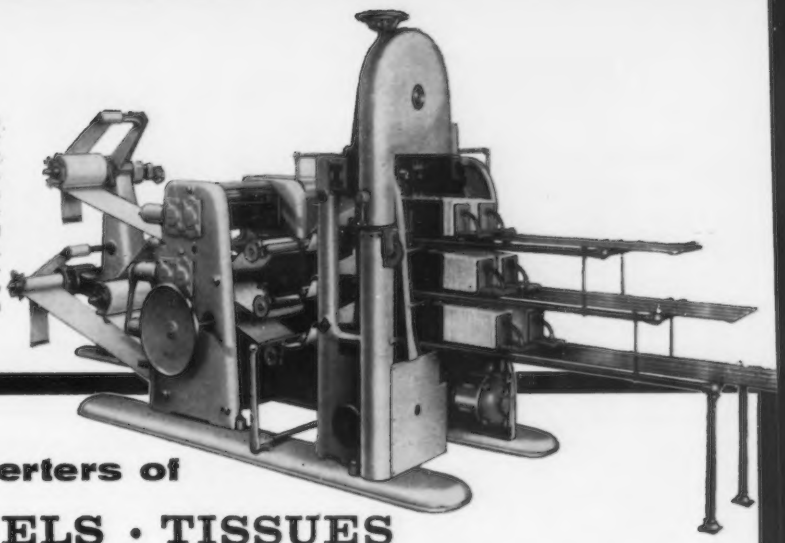
F. C. Butcher, UK: Quality Control on a Sheet Cutter.

N. Blomqvist and S. Pettersson, Sweden: Quality Control on a Paper Machine.

G. Botto Micca, Italy: Statistical Evaluation of the Production of a Kraft Paper Machine before and

A NAPKIN FOLDER WITH TRIPLE EMBOSSER

Pacemaker for the industry, this machine produces regular or facial quality napkins (and other paper or cellulose products) of all standard sizes in perfectly folded squares. Rotary in operation, it handles one to four parent rolls simultaneously and produces up to 2400 completed printed and embossed napkins per minute! Multi-color oil or flexographic ink printing and embossing units can be furnished or added as required. Heavy duty construction, high production speed, dependability, low original cost plus low maintenance expense makes this machine the most popular napkin producer in the industry.



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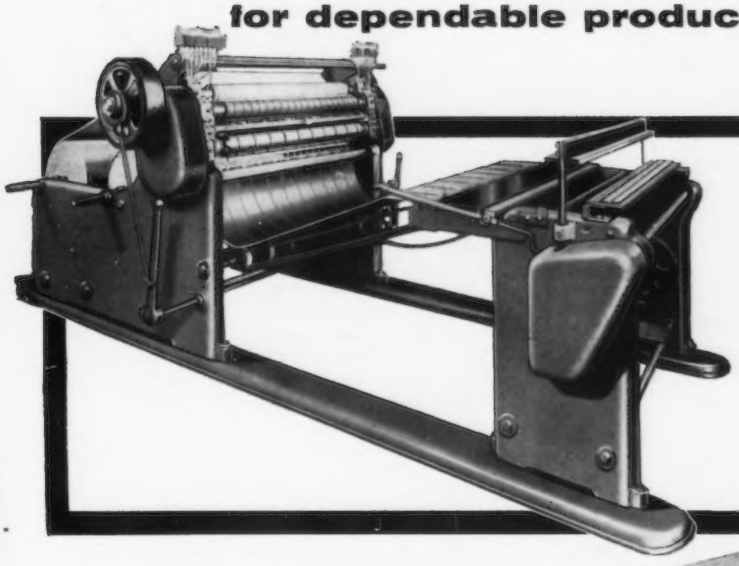
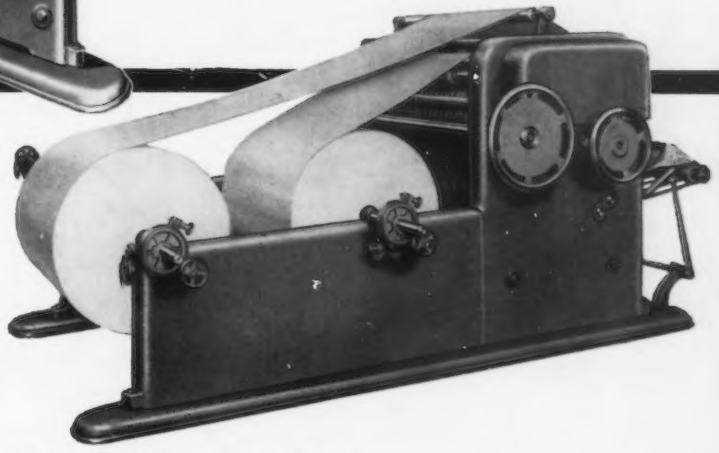


ROTARY TISSUE INTERFOLDER

Production of single or double-ply interfolded toilet tissues in single or multiple folds reaches unprecedented new highs with this modern Hudson Sharp machine. Sturdily constructed and completely rotary in operation it carries paper from parent rolls through feed rolls, into folding cylinders, and continuously delivers a product of exact sheet count to the packaging unit. Equipped with a semi-automatic banding unit, one operator easily handles the machine's entire output. Embossing units can be added if desired.

ROTARY TOWEL AND WAX INTERFOLDER

Designed to produce interfolded towels in any standard size, this machine produces from 10 to 12 cases, per towel width, per hour! Completely rotary in operation, all necessary adjustments are simple to make and easily accessible. Furnished in any widths up to 60" in all standard sizes and folds. Besides towels, this machine is practically adaptable for interfolding wax papers, glassines, butcher wraps, delicatessen papers and others. Write for complete information on any of these popular Hudson Sharp machines that are continuously increasing converting production throughout the industry.



Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

FMC Packaging Machinery Division

Hudson-Sharp Machine Company

1201 MAIN STREET, GREEN BAY, WISCONSIN

after the Replacement of the Head Box.

Experimental Design

In the second section of the congress it was pointed out that experimental designing began in the 1930's in England at agricultural experimental stations and gained ground in industry after World War II. The results achieved both in the laboratory and on a factory scale have been excellent.

The benefits are many. Application of this system requires detailed planning of the experiments. As regards expensive experiments, amazingly great economy can be achieved through statistical experimental design and it is now possible to achieve more reliable results with fewer experiments than has previously been the case.

It was emphasized that the elucidation of the reciprocal relationship of the numerous factors associated with the manufacturing programme is an important task of statistical methods.

The lectures given in the Experimental Design Section were:

Alan F. Tout, UK: Reflection on the Use of Statistical Methods.

A. B. Truman, UK: Investigations into Strength Loss during the Manufacture of Sulphite Pulp. (Read by A. F. Tout.)

L. Eriksson, Finland: Comparison of Hydrocyclones. (Read by P. Koskenuoma.)

F. W. Meyn, Norway: An Example of Incorrect Use of the t-Test in Comparative Investigation.

Miss M. M. Darribere and J. P. Mauge, France: Investigation into a Method of Purchasing Wood by Weight. Determination of Dryness in a Consignment of Pulpwood. (Read by Miss Darribere.)

Alan F. Tout, UK: Evolutionary Operation.—New System of Running Process Plants and How It Is Used.

J. Newman, UK: Examples of the Practical Use of Response Surface Techniques and Evolutionary Operation.

G. Elfving, Finland: Designs for Quadratic Regression Analysis.

O. Anderson, Sweden: Particle Counting by Photometry.

C. A. Bicking, USA: Experimental Design Philosophy in the Pulp and Paper Mill.

O. Lokki, Finland: Statistical Analysis of a Manufacturing Process.

H. Braunegg, Germany: Use of Statistical Methods for Printability testing of Coated Papers.

P. G. Moore, D. I. Smith and D. A. Thomas, UK: Statistical Analysis of a Pulp Evaluation Method. (Read by P. G. Moore.)

F. Sundman, Finland: Factors Affecting Paper and Board Varnishing Results Investigated in a Mill Trial Using a Youden Square Design.

Ernest F. Barker, Paper Trade Journal's European editor, is now settled in Europe with a permanent address at 22 Bd. Princesse Charlotte, Monte Carlo, Monaco. He is engaged in his first swing through a group of European countries. We estimate he will spend three weeks each month visiting the paper industry in various countries and the balance in Monte Carlo. To save time it is recommended that regular news releases be mailed directly to our New York office.

Testing Final Product

The following lectures were delivered in the Section "Testing of the Final Product."

H. E. Alve, Norway: Analysis of Substance Variations in a Paper Machine.

Miss M. M. Darribere, France: Statistical Utilization of Basis Weight Measures.

A. Menasce, Italy: Experimental Errors in the Determination of Some Physical Paper Properties.

I. Palenius, Finland: Studies on Dry Content of Chemical Pulp by Using Statistical Methods.

Anon., Centre Technique de l'Industrie des Papiers, Cartons et Celluloses, France: Results from an Investigation on the Dispersion of Some Paper Tests. (Read by J. Barbut.)

W. Masing and W. Volk, Germany: Methods Used and Results Obtained by Modern Statistical Measurements of Various Paper Characteristics.

Operational Analysis

Operational analysis, which is a new expression for the numerous methods aiming at a more effective production process, was the final subject of discussion. Perhaps the best-known method is linear programming, the subject of a German lecture (W. Vollmer, Germany: The Use of Linear Programming in Paper Converting).

Finally, the many organizational problems which are associated with the application of statistical methods on a factory scale were dealt with in a panel discussion in which experts from the USA (Ch. A. Bicking, Carborundum Co., and D. Macaulay, Paper Quality Control, Inc.), UK and Germany advanced their views.

"About this supplementary income of yours Newton . . ."

Pulp Paper and Board Mill Maintenance

Based on actual in-plant experience and prepared by well known men in the paper industry, this 126 page book brings you in easy to read language procedures for plant maintenance of kraft mills, semi-chemical mills, bleach plants, fourdrinier and cylinder machines, stock preparations equipment, and other machinery used in pulp and paper making. Price $2.50.

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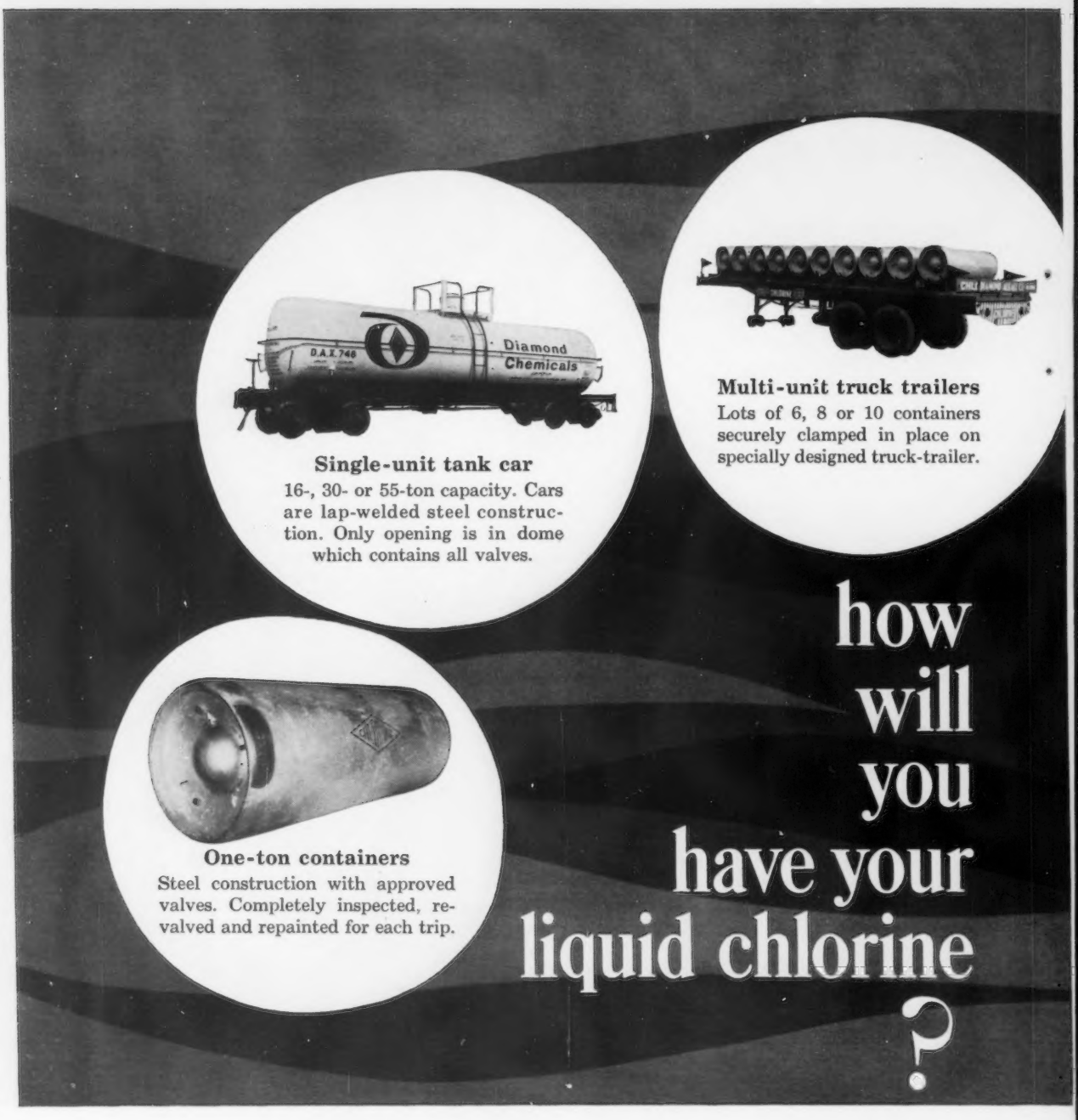

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16-, 30- or 55-ton capacity. Cars are lap-welded steel construction. Only opening is in dome which contains all valves.

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Lots of 6, 8 or 10 containers securely clamped in place on specially designed truck-trailer.

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Steel construction with approved valves. Completely inspected, re-valved and repainted for each trip.

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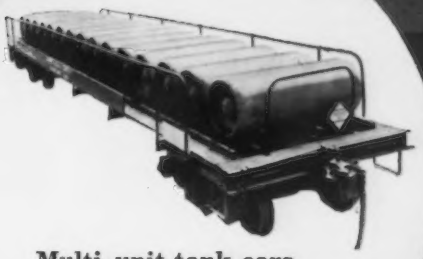
Originating at Muscle Shoals, Ala. and Houston, Texas. The most modern, most economical shipping on inland waterways.



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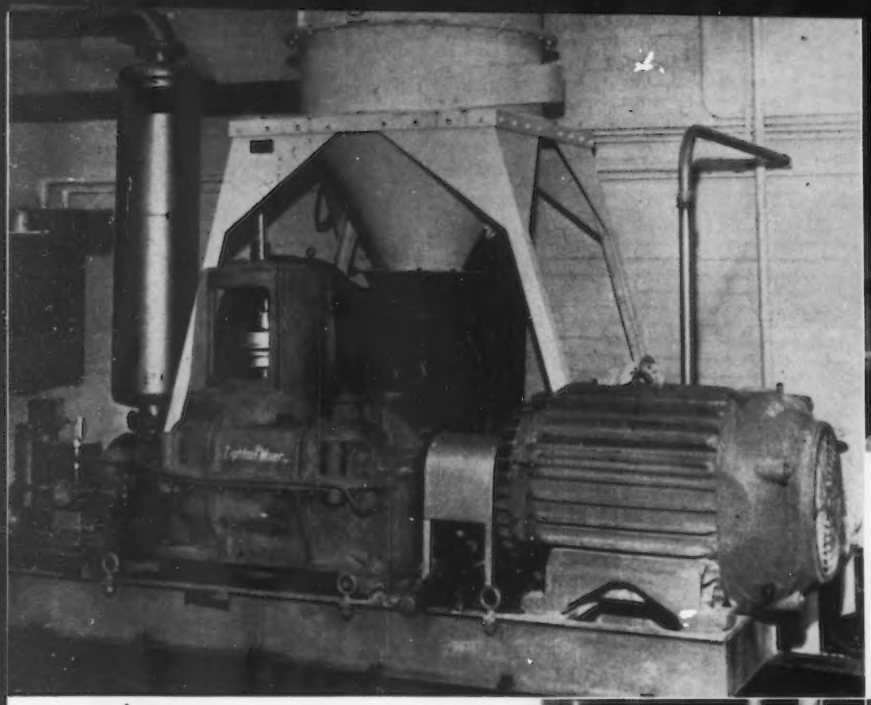
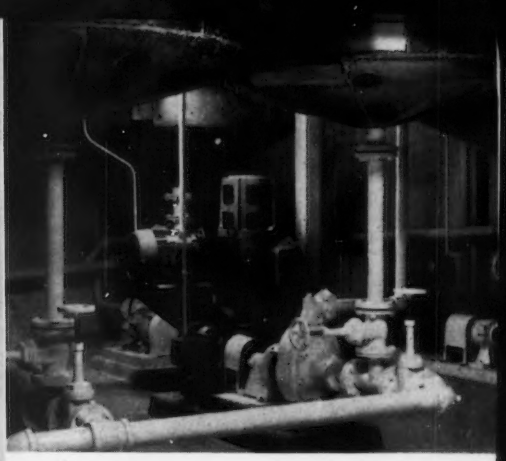
Seamless steel construction, fitted with I.C.C. approved valves. Each is inspected, re-valved and repainted for each trip.

From Diamond, you get Liquid Chlorine where you want it . . . when you want it . . . in the quantities you want . . . at the lowest shipping cost . . . safeguarded by the most highly skilled technical service. You'll always be glad you're doing business with Diamond, one of America's largest producers. For the Diamond "Chlorine Handbook", write Diamond Alkali Company, 300 Union Commerce Building, Cleveland 14, Ohio.

Diamond Chemicals



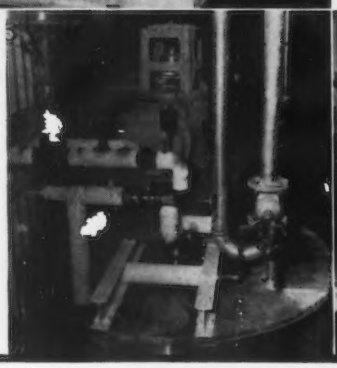


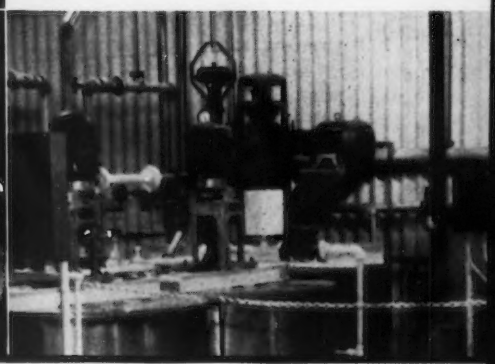
CLAY SLURRY at 71% solids waits in five 120-ton storage tanks, held in uniform suspension by 10-hp LIGHTNIN Mixers.

STARCH MEETS WATER in 1,000-gallon tanks. Then clay slurry is charged, reducing solids to 52-58%. A 3-hp propeller-type LIGHTNIN Mixer in each tank assures consistent density of feed to continuous cooker.

MAKEDOWN One 75-hp LIGHTNIN Mixer slurries 50 tons of dry clay—a hopper-car load—as it feeds into dispersion tank at 12.5 tons per hour.

HIGHLY THIXOTROPIC clay-starch slurry from cooker turns over in two tanks equipped with 10-hp LIGHTNIN Mixers. Then it moves to 1,000-gallon storage tanks where 5-hp LIGHTNIN Mixers keep it thoroughly blended to prevent crusting before use.





One man, 20 mixers clobber cost of coatings

Designed to handle clay in bulk as a slurry, this new mixing system at Blandin Paper Company, Grand Rapids, Minn., helps in four ways to prepare coatings at record low cost.

1. The system itself cost much less to build than comparable coating facilities.

2. It permits the purchase of lower-cost bulk clay.

3. Ended are the problems of space-wasting dry storage, handling of bags, and dust. Clay is always ready for immediate use.

4. One man per shift handles all operations—with the help of 20 LIGHTNIN Mixers ranging in size from 3 to 75 hp.

What mill management says

"We knew that mixing was going to be a vital part of our new process," says Harold F. Zigmund, Blandin's vice-president in charge of manufacturing. "We required equipment that was sound and could give us the process result we were looking for.

"LIGHTNIN Mixers have enabled us to accomplish both of our goals. The cooperation and service we have obtained from the MIXCO field representative have been most helpful to us."

Since completing the new coatings plant, Blandin has decided to use LIGHTNIN Paper Stock Agitators on the mill's three brown-stock chests, a neutralization chest, and a broke chest.

Guaranteed mixing performance can mean savings for you, just as it does for Blandin. And it's easy to get. At a call from you, an experienced LIGHTNIN Mixer representative can size up your needs and help you select precisely the right mixing system to deliver the results you want.

He draws upon the experience of thousands of test runs, and successful installations in several hundred mills. He offers you widest possible choice of *standard* power-speed combinations and mixer designs. Call him in now (he's listed in Paper & Pulp Mill Catalog). Or write us direct.

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Tanks as big as a barge can carry

These new tanks have unobstructed interiors to carry maximum cargo with least danger of contamination—the essential requirements of an order for two independent tank barges from Union Carbide Chemicals Company. One barge is designed to carry Grade A and lower liquids having a Reid Vapor Pressure not exceeding 25 psi. The other barge will carry similar cargoes having a Reid Vapor Pressure not exceeding 40 psi.

American Bridge designed and constructed the tanks and barges at its modern Plate Shop in Orange, Texas. The results: two Jumbo Hopper Barges 195′ x 35′ containing six tanks 52′ long x 14′-6″ O.D. and weighing 22 tons with a total capacity of 383,000 gals. per barge. The reinforcing members for the tanks were placed on the tank exteriors leaving unobstructed nickel-plated interiors.

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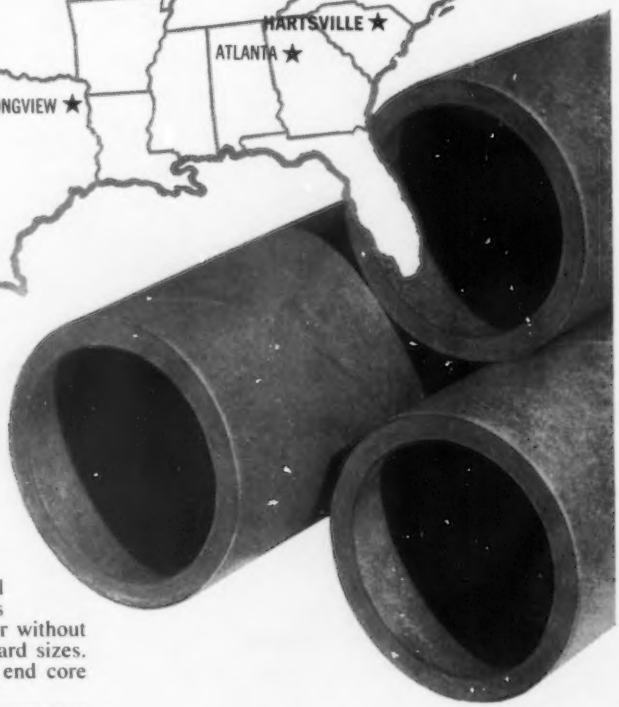

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1102

Forest Products Laboratory Celebrates 50 Years Of Service to Industry

"Better Wood Products through Research"

50 YEARS OF SERVICE

The Golden Anniversary of the U.S. Forest Products Laboratory, oldest research organization of its kind in the world, was observed June 2-4 at Madison, Wis., where the trail-blazing institution was founded 50 years ago.

The celebration, brought hundreds of friends, "alumni," and well-wishers to Madison. The three-day affair began with a banquet Thursday evening, June 2. At a general meeting of Laboratory staff and guests Friday morning, key leaders in industry, government, and education spoke on various facets of research, past and future. And on Friday afternoon guests toured the Laboratory to view special exhibits and witness dedicatory ceremonies. All day Saturday, the Laboratory staff held open house for the public.

The pioneer Laboratory was dedicated June 4, 1910, to a career of public service which has yielded rich returns to both producers and consumers of a multitude of wood products. Among its achievements are such industrial advances as follows.

Outstanding Achievements

1. New pulping processes for hardwoods.

2. Basic production and engineering discoveries that helped launch the nation's house-prefabrication and timber-laminating industries.

3. Kiln drying and other wood seasoning processes that swiftly and safely remove excess sap from many millions of board feet of lumber annually.

4. Preservatives and processes used by industry to immunize huge quantities of wood against decay and fire.

5. Packaging research that has greatly reduced shipping costs and losses during peace and war.

How It Originated

Cooperative efforts of the University of Wisconsin and the Forest Service, U.S. Department of Agriculture, brought the Laboratory into existence. Forest Service research on wood had been going on for a few years under agreements with a number of universities from New England to California. But it had quickly become obvious that better organization and closer contacts between workers were needed on the various projects.

Proposals to build a laboratory for forest products research were turned down, however, by Congress. This led to a canvass of various universities by Forest Service officials, then headed by Chief Forester Gifford Pinchot. Several schools made concrete proposals of aid and cooperation. The best one came from President Charles Van Hise, conservation-minded president of the University of Wisconsin, whose Board of Regents authorized an offer that included a new building complete with heat and power.

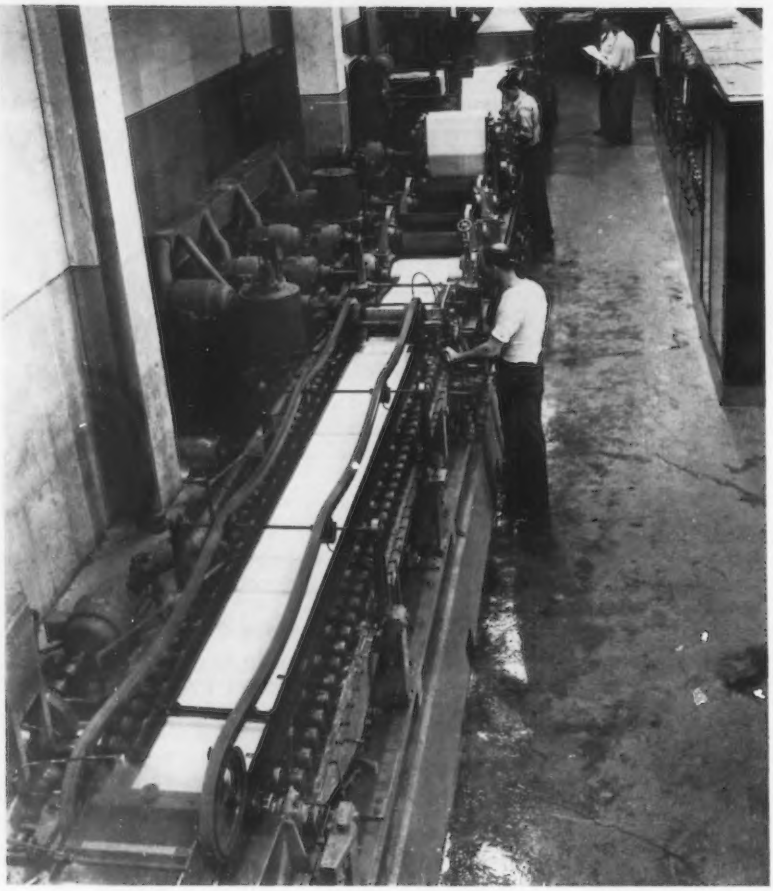
Plaques and Citations

The forest industries paid tribute to the Forest Products Laboratory by presenting plaques and citations. The awards were made by the Home Manufacturers Ass'n., the American Institute of Timber Construction, the Douglas Fir Plywood Ass'n., the Insulation Board Institute of Chicago, the National Lumber Manufacturers Ass'n., and the American Paper and Pulp Ass'n.

At the same ceremonies the Laboratory received the U.S. Department of Agriculture's distinguished service award for "pioneering and maintaining visionary planning, sound execution of research, and development of processes resulting in greatly expanded and more efficient use of forest products." Conrad A. Elvehjem, president of the University of Wisconsin, presented a special citation to McGarvey Cline, the Laboratory's first director, now living in Jacksonville, Fla.

Honored Guests

Among the honored guests were Ervin L. Peterson, assistant secretary of Agriculture; W. E. Difford, executive vice president of the Douglas Fir Plywood Ass'n.; F. K. Weyerhaeuser, chairman of the board of the Weyerhaeuser Co.; Howard E. Whitaker, president of the American Paper and Pulp Ass'n. and board chairman of the Mead Corp.; Samuel Lenher, vice president of E. I. du Pont de Nemours and Co.; John R. Kimberly, chairman of the board of the Kimberly-Clark Corp.; and George A. Garratt, dean of the school of forestry, Yale University.



Experimental fourdrinier paper machine used in research at the Forest Products Laboratory.

Some Forest Products Laboratory Notable Achievements

This month when the Forest Products Laboratory of the U. S. Dept. of Agriculture is celebrating its fiftieth anniversary, it seems appropriate to pay tribute to some of the leaders in its pulp and paper division and the more important developments which they pioneered.

When the Laboratory began operations in 1910, one of its first research ventures was an experimental groundwood pulping laboratory at Wausau, Wis. Out of that early work came basic information about groundwood pulping of American woods that serves to this day. Two men who later went on to distinguished commercial careers, J. H. Thickens and G. C. McNaughton, did the research and published USDA Agriculture Bulletin 343, "Groundwood Pulp," which for many years a guide to millmen, though long since out of print.

The Wausau laboratory went out of existence during the early years, but in its place today is a range of pilot-scale equipment at the Madison laboratory capable of producing a wide variety of pulps and papers. The research program of the division is firmly geared to the realities

of the paper industry. Much of the work in progress is conducted in cooperation with manufacturers of pulp and paper.

Early Administrators Well Known

A number of the early administrators of the Division went on to distinguished industrial careers. Messrs. Thickens and McNaughton later joined the Masonite and Mead organizations, respectively. Henry E. Surface was an early division chief —succeeded by O. L. E. Weber in 1915. Otto Kress, who succeeded Mr. Weber in 1919, was one of the founders of the Institute of Paper Chemistry, and its technical director for many years.

Dr. Kress was followed by John D. Rue, who operated the Forest Products Laboratory's Pulp and Paper Division in the 1920's until he joined the Champion Paper and Fibre Co. Dr. Rue was succeeded for a brief period by Clark C. Heritage, who later became director of research for the Weyerhaeuser Co. and still does consulting work. Mr. Heritage was followed in 1929 by the late C. E. Curran, who was in charge until he passed away at the peak of his capabilities in 1940. The Pulp and Paper Division is now directed by Gardner H. Chidester.

Other staff members who left to become prominent in the industry were Sidney D. Wells, Institute of Paper Chemistry; Rolland N. Miller, Oxford Paper Co.; Vance P. Edwards, consultant, formerly with the International Paper Co.; Walter H. Swanson, Kimberly-Clark Corp. and J. N. McGovern, Parsons and Whittemore.

Led in Southern Pine Research

Among the hundreds of accomplishments, great and small, of the Pulp and Paper Division, some that have most significantly influenced the pulp and paper industry have become dimmed by the mere passage of time. There was a time when the Forest Products Laboratory, well abreast of current pulping technology, and, then as now, making exploratory tests of various species, pointed out the now obvious affinity between the southern pines and the kraft process. Dr. Kress, division chief of that period, could be found sweating out with others of his staff and southern mill crews large-scale production trials of laboratory developments.

Once the southern pine kraft industry became firmly established, the Forest Products Laboratory urged it to take advantage of the possibilities in the production of products other than unbleached kraft. The multistage hypochlorite bleaching of southern pine kraft pulp was reported by Sidney D. Wells in 1920. C. E. Curran reported on the results of multistage bleaching of the pulp by chlorine and hypochlorite in 1929. The subsequent developments of chlorine multistage bleaching procedures are basically the same as those used now throughout the industry for producing a diversified line of products, including bond, writing, wrapping, printing, and specialty papers.

Pioneered NSSC Pulping

In the mid-1920's the Pulp and Paper Division pioneered the new pulping process called neutral sulphite semichemical pulping. This process is now firmly established alongside the older pulping methods, and

Some of the Leaders in Pulp and Paper Research

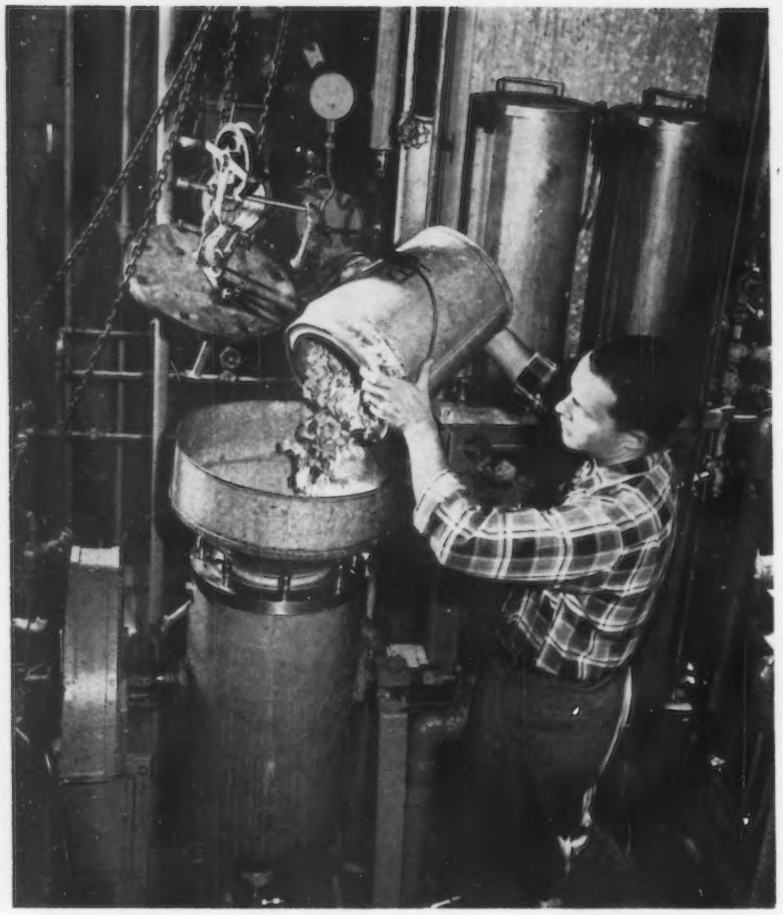
Clark C. Heritage

Gardner H. Chidester

Sidney D. Wells

Vance P. Edwards

J. N. McGovern



A small digester is loaded with chips for mild chemical treatment to soften them, as part of an experiment in semichemical pulping—a high-yield process developed at the Forest Products Laboratory.

it is still showing steady growth, with many of its potentialities for diversification and expansion yet to be realized.

Largest single product of the semichemical pulping process to date has been 9-point corrugating board, a high-tonnage product well suited to stand the vicissitudes of new process pioneering. First commercial semichemical product was a 9-point board from spent (tannin extracted) chestnut chips. Currently the production of semichemical pulp amounts to over two million tons annually, practically all of which is made from hardwoods. Semichemical pulp, alone or in mixture with other pulps, is now used in the production of linerboards, papers of newsprint quality, wallboards and roofing felts, coating papers, book papers, glassine, and bond papers. Bleached hardwood semichemical pulps often have higher strength than the unbleached pulps, and frequently their addition to a paper furnish results in improved printing and writing qualities.

Developed Cold Soda Process

In 1952 the Forest Products Laboratory announced a new pulping process promising even higher yields than the semichemical method. This is the so-called cold soda process. Essentially, wood chips are treated at "room" temperature and atmospheric pressure with caustic soda. The softened chips are fiberized in a disk mill. The yield is about 90 per cent on a dry wood basis. This pulp is now being used for the manufacture of corrugating board, molded pulp products, and tissue paper; also as part of the furnish of newsprint paper, bookgrade printing paper, and in some grades of boxboard. The production of cold soda pulp in the United States is now nearly 210,000 tons annually. Cold soda pulp is also produced in Australia, Italy, and Japan.

Other Developments

Work at the Laboratory has also demonstrated the suitability of several species for making purified pulps for chemical conversion. For example, it showed that purified prehydrolysed kraft pulp for viscose rayon grade can be made from southern pine, white-pocket Douglas-fir, aspen and gums. Acetate grades of pulp have been made from aspen prehydrolysed kraft and sulphite pulps.

Paper overlays for plywood and lumber were developed that permit the use of wood otherwise left in the forest or the scrap heap and simultaneously provide a product with superior surface characteristics regardless of the species of wood underneath.

Invented Paper Honeycomb

Later, the Pulp and Paper Division developed a resin-impregnated paper honeycomb core for lightweight aircraft and building panels. The cores and panels have good properties. They are finding a wide variety of uses, including building partitions, trailers, shipping containers and pallets, furniture, and boats.

One of the major objectives of the Pulp and Paper Division is to provide all possible technical aid to increase the use of hardwoods. Much has been accomplished in this direction, but the possibilities still loom large.

In 1958 the Pulp and Paper Division received a distinguished service award from the Secretary of the U. S. Department of Agriculture for the "execution of research and development of processes resulting in greatly expanded and more efficient use of hardwoods for pulp and paper." This was the first distinguished service award ever granted to an entire research division in the Department of Agriculture.

The Pulp and Paper Division has an approach to pulping research that complements and only slightly overlaps the industry's preoccupation with processes and products. That approach is from the species utilization standpoint and is meshed with the concept of broadly integrated timber use. Complete use of either 100 per cent of the tree or 100 per cent of the forest calls for some division of the raw product between those industries that can use wood only as boards and timbers and those skilled in the use of wood particles or fiber. The Pulp and Paper Division hopes to continue to reveal technologically new uses for fibers of plentiful species and for fibrous industrial residues.

How to Solve Stock Pumping Problems Ahead of Time

Consideration of three basic factors can prevent many pump problems beforehand. These factors are: size and kind of material to be pumped, possibility of air entrainment, and range consistency which may be met.

A. E. Risk,
Pump Department
Canadian Allis-Chalmers, Ltd.,
Lachine, Quebec

Solutions to paper stock pumping applications vary by pump design, manufacturer and the individual paper mill. These factors, together with other variables, do not permit us to create absolute ground rules as to what should always be done to get best efficiency in stock handling.

Nevertheless, most situations fall into three basic problem areas, or are a combination of any of these three:

- Size and type of material
- Air entrainment
- Consistency.

The important thing is to recognize a potential pumping problem ahead of time when consultation with the manufacturer may pinpoint the problem, then eliminate it altogether.

Impeller Design Reduces Problems

Regarding size and type of material, the problem here is oversized pieces which tend to block the runner or stringy material which staples across the impeller inlet edge. Pumping coarse rejects from the bull screen or handling stock out of the blow pit where knots are present are typical of this type of service. Shredders or areas where bark and long slivers are present are often sources where stapling can be a problem.

When pumping from the bull screen or blow pits, the oversize pieces are in "chunks" and can usually be taken care of by using an open runner with about a three-inch sphere size. There is no real problem here once the condition is recognized at the start for what it is and the proper impeller design applied at the outset.

This same problem may or may not be present in handling screen rejects. Screen rejects often contain small slivers of the order of ½-inch size and, if the capacity is large, the pump required usually has a large enough sphere size in the closed impeller design so that blockage is not a problem. If the capacity is small, however, such as one with a sphere size of the order of ½-inch, it may be desirable to go to an open runner design.

One point in connection with services of this type, where we depend on the oversize piece being ground down between the open runner and the wear plate, is the possibility of temporary power overloads up to 25 per cent. This factor should definitely be considered in sizing the motor and starter. These overloads are probably not long enough in duration to damage the motor but can be annoying if they cause the starter relays to kick out continually.

Stringy material presents a slightly different problem. Slivers or bark several inches long will wrap around the shaft of a double suction pump, so any pump with a shaft

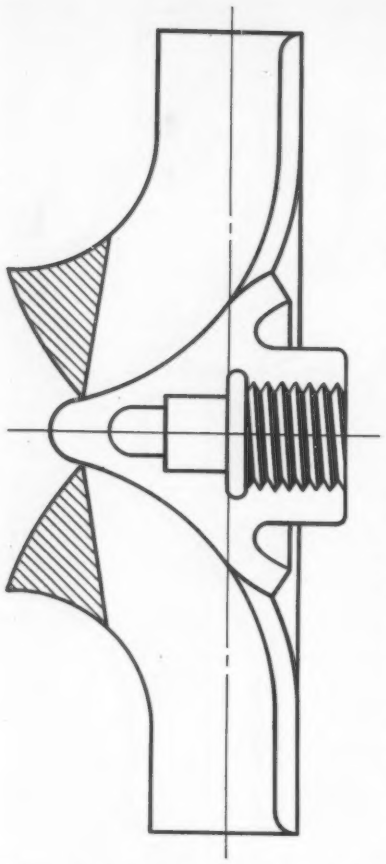


Figure 1. Shaded area represents material to be removed from impeller to minimize stapling.

through the impeller eye should be avoided; that is, an end suction pump is desirable. Even in the end suction type there may be some tendency for the material to staple over the inlet edge of the impeller. Operators usually take care of this by stopping the pump, allowing the material in the discharge line to flush solids off the impeller by running back through the pump and starting the pump after it is cleared.

Understandably mill management objects to this procedure and, in cases of this kind, it is usually possible to minimize stapling by machining or grinding the inlet edge of the runner to reduce or eliminate stapling at the inlet. (See Figure 1.)

This machining solution was successfully applied to a 6 x 5 pump originally sold for white water and subsequently relocated to handle screen rejects with slivers up to ¾-inch. Before machining, the pump eye plugged about every 30 minutes.

The appearance of the material to be handled will usually indicate whether stapling problems can be expected. If the possibility of stapling is suspected, it is advisable to size the unit conservatively, since any modification of the impeller inlet will change the pump performance and usually results in a faster dropping-off of the head capacity characteristic.

Stock Air Entrainment Key

For air entrainment, as in the case of solids, knowing where the stock is from usually gives a good indication of what kind of air entrainment can be expected. Stock of the order of five per cent and up usually contains all the air it can hold regardless of the source. Stock from broke beaters, lap pulpers, couch pits or off some screw conveyors and screens usually contains considerable air. In all stock applications it is important to keep the suction line as short and direct as possible without pockets where air may collect. This is even more important if entrained air is expected.

The open runner is the answer to air handling problems. This design depends on the added recirculation between the impeller and side plate to break up air pockets forming in the impeller eye and pump them out the discharge. The action is similar to that used in many self-priming pumps, that is, recirculation of liquid in the pump to help pick up air on the suction side and pump it out the discharge.

Figure 2 illustrates the effect of air entrainment on a pump handling clear water. The vertical scale represents percentage performance compared to the nominal pump rating, that is, performance at the rated point with no air taken as 100 per cent. In this instance 2.5 per cent air entrainment results in a 16 per cent reduction in capacity but no change in efficiency, while beyond this point both efficiency and capacity fall off with increasing rapidity. The shape of these curves and point of final break-off will vary with pump and installation conditions but this example illustrates air entrainment does have a major effect on centrifugal pump performance.

Because air in stock tends to reduce capacity and head, the pump should be oversize. For example, at three per cent air the pump would be oversize about 50 per cent and about ½-inch clearance used between the impeller and side plate. Where the air content approaches five to seven per cent the pump would be oversize about 100 per cent and one-inch or more clearance used between the impeller and side plate. These figures are approximate only, since it is usually necessary to determine the correct clearance by trial and error; but, in sizing the pump, consideration must be given to the head and capacity reduction resulting from entrained air. An air content of this order is unusual and in most cases the standard open impeller with normal 1/64-inch clearance between the impeller and side plate is adequate for services off broke beaters, lap pulpers etc.

In some cases it may be necessary

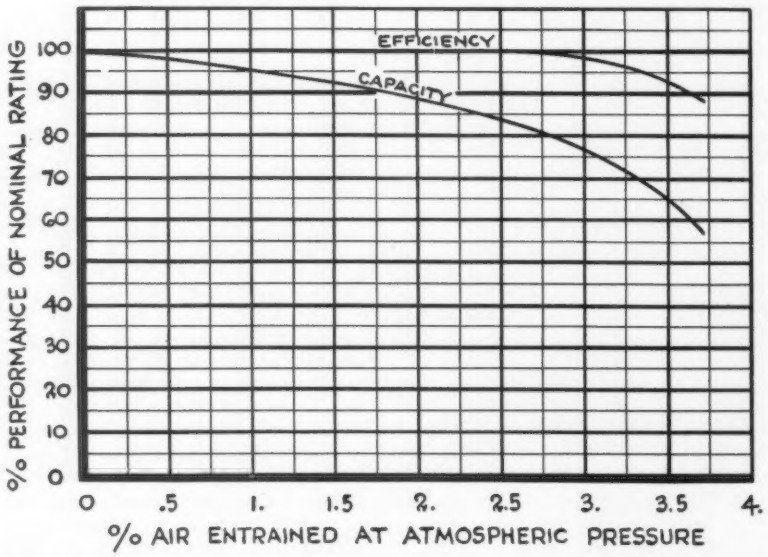


Figure 2 illustrates the effect of entrained air in centrifugal pump performance when handling clear water.

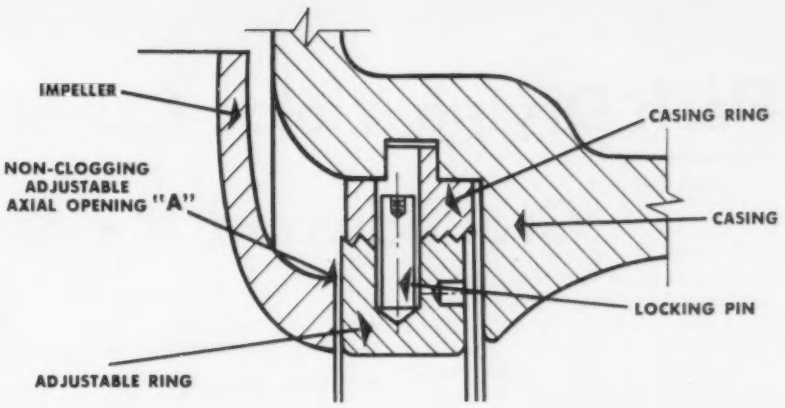


Figure 3. Adjustable axial wearing rings are suggested for some pump applications. Unlike the radial clearance of standard wearing rings, the axial clearance provided by the adjustable ring is self-cleaning. Velocity and pressure differentials in adjustable rings prevent "balling" of fibrous or adhesive material, eliminating the primary cause of seizing and frozen rotating elements.

to open up the clearance slightly. For example, one paper company using a 10 x 6 SSOR (another variation of the basic single stage, single suction design) off a lap pulper handling 3½ per cent stock found it necessary to open up the clearance to ⅜-inch before completely satisfactory operation was obtained. In cases where it is found necessary to increase the standard open impeller clearance, it is usually desirable to start off with approximately ⅜-inch clearance. Based on several applications, it would appear there is little or no difference in the pump performance (in terms of air-handling ability) until the clearance is something better than ¼ inch. Beyond ¼ inch, the improvement in air handling ability increases considerably as clearance is increased. Basically the standard open runner pump should be used for any service involving beaters, while other applications in the mill can usually be handled with the standard closed runner unless some particular air entrainment problem is anticipated that is peculiar to that mill.

Anticipate Stock Consistency

As mentioned previously, stock of the order of five per cent and up usually contains all the air it is possible for it to entrain and at this higher consistency we would probably consider an open impeller as a necessary requirement regardless of the stock source.

Stock or white water up to ¾ per cent consistency (provided it has no slivers) presents no problem for most pump designs. However, from ¾ to 1½ per cent, the use of axial rings in the double suction type should be considered. (See Figure 3.)

It is desirable but not essential to specify axial rings on a double suction pump wherever white water or stock are being handled and, if slivers of any sort are present, they are a *necessity*. In some mills the stock seems to tend to cook between the radial type rings resulting in a buildup of stock and finally pump seizure. Axial rings will eliminate this problem.

Some mills cut slots in the impeller rings in an effort to eliminate seizure; but slots are an inefficient way of accomplishing this, since the added recirculation can cause a reduction of five to ten per cent in pump capacity, depending on working pressure, pump size etc.

A pump specifically designed for handling paper stock can be used on all consistencies up to five per cent (refer to Figure 4) but, in the three to five per cent region, it is desirable to check the inlet velocity in the suction line. Operating experience indicates for stock up to three per cent it is desirable to keep the velocity in the suction line under seven feet per second; for stock three to five per cent suction line velocity under four feet per second.

Consistencies over five per cent should be engineered to suit the specific conditions of each application. Such services will usually require some modification of the standard stock pump and special attention must be paid to the suction chest layout since the conditions on the suction side of the pump are the most important factor in attempting to move high consistency stock. Once stock is on the inlet edge of the impeller vane operating at, say, 1150 r.p.m., it has no place to go but out the discharge. The problem is to get the stock up to the impeller vanes. consistencies well over five per cent can be handled by centrifugal pumps (for example one mill has successfully operated three units at 9.7 per cent consistency) provided care is taken in designing the suction layout.

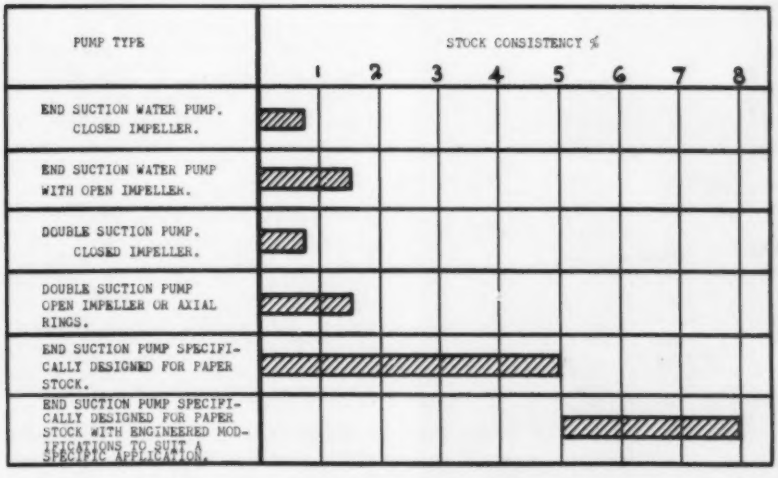


Figure 4. Approximate consistency limitations for various pump types do not take into account air entrainment or pumping of oversize material such as knots, sliver., chips, etc.

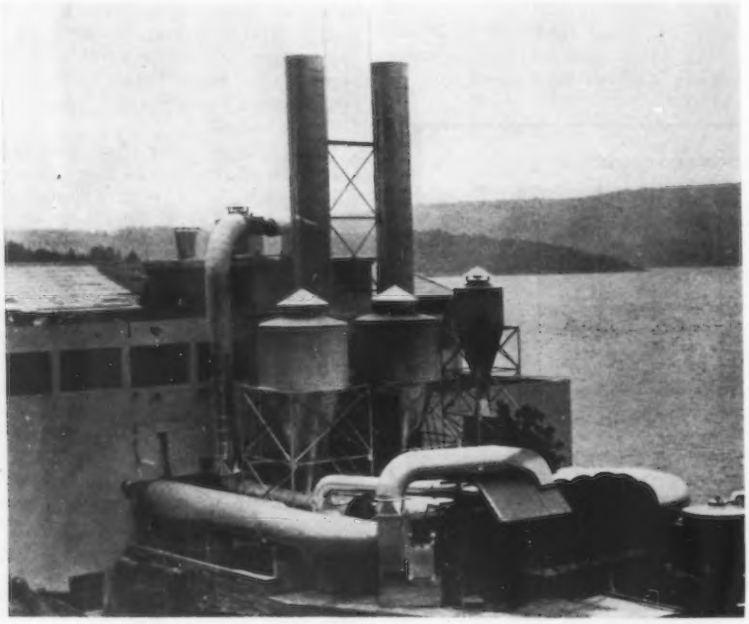
Flash Drying Yields Quality-Plus Groundwood For Norwegian Mill

- **Wet machine dewaters pulp which is then fluffed**
- **High velocity hot air dries pulp in three stages**
- **New automatic press provides high density bales**
- **Repulps easily, has same qualities as wet groundwood**

Carl J. Peterson,
Assistant Sales Manager,
Pulp Equipment Division,
Rice Barton Corp.

Early in 1958, the management at Kammerfos Bruk decided to investigate methods of drying their groundwood pulp. They had recently installed a new Kamyr wet machine to dewater their high grade groundwood pulp which they were shipping at 55 per cent b.d. consistency. The possibility of installing conventional sheet drying equipment was quickly discarded. Groundwood dried by such methods is usually downgraded and purchased at a low price on the open market due to difficulty in repulping and other well-known associated problems.

The Fibre Flash drying system, however, had been producing high quality groundwood in a fully sized commercial plant for over a year. Capital costs are very low for this dryer since it requires very small foundations and very little building facilities as all of the dryer portion is installed outdoors. Labor requirements for the dryer are very low and the efficiency is at least as good as the best Flakt type dryer. These factors combined with the important factor of pulp quality decided the Kammerfos Bruk's management to favor the purchase of a Fibre Flash dryer. Aktieselskapet Kammerfos Bruk is a Norwegian mill located in Kragerö, about 90 miles to the southwest of Oslo, on the Skagerak of the North Sea. The Fibre Flash dryer is produced by the Rice Barton Corp., Worcester, Mass., and Associates except for Scandinavia where Anth B. Nilsen & Co., Ltd., Oslo, Norway, sells and builds the unit.



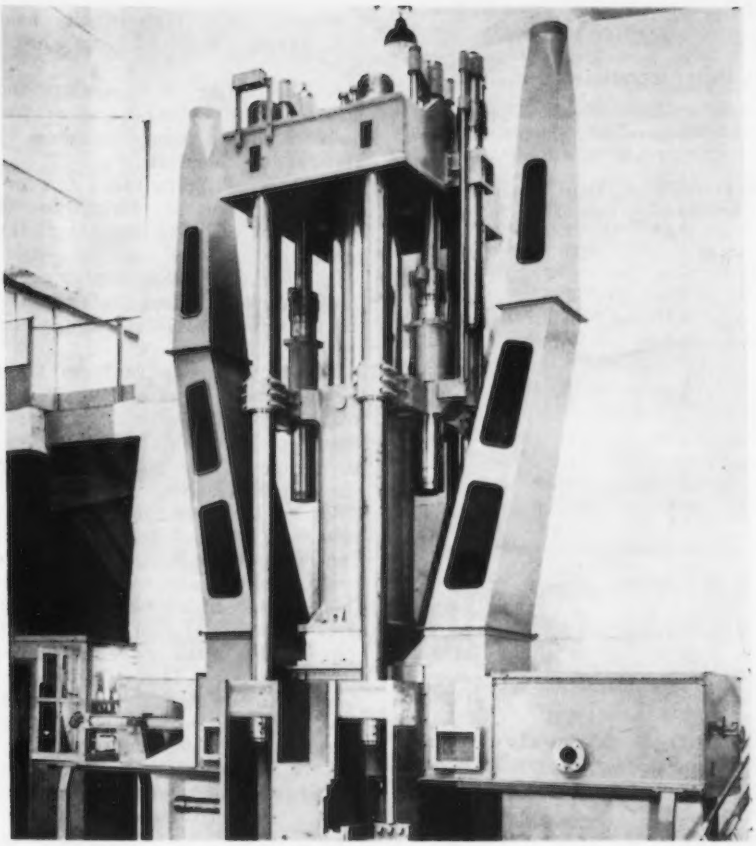
View of the flash dryer installation at Aktieselskapet Kammerfos Bruk in Kragerö, Norway.

Kammerfos Bruk's installation of the Fibre Flash dryer has the following significant features:

- A Kamyr wet machine is used for dewatering instead of a vacuum decker or Rice Barton extractor together with a Rice Barton disc-type press. This is because the wet machine was installed as part of the original plant.

- Three-stage drying of a suspended fluffed pulp using hot air at high evaporation velocities.

- A completely new baler giving high density pulp in bales which are



Automatic pulp baling press repeatedly compresses pulp into sheets under 700 tons pressure until the proper sized bale is formed.

automatically formed and require no handling or stacking of sheets. This bale, however, breaks readily into sheets upon re-pulping. This means that the pulp absorbs water more easily in the re-pulper due to the additional contact area provided by the sheet form.

• The plant is completely instrumented providing complete automatic operation with only one man supervising the plant and two men weighing, wrapping and tying the bales.

Three-Stage Drying

The drying system as installed is designed for a capacity of 100 tons per day with an entering consistency of 45 per cent a.d. This allows Kammerfos to increase the output of their wet machine at a lower consistency if necessary. The sheet from the wet machine is fed into a sheet breaker where it is picked up by a conveying fan and discharged from a cyclone into the pulp fluffer. In the pulp fluffer the pulp is fiberized by two high speed rotors equipped with swinging hammers. From the fluffer the pulp enters the first drying stage which consists of a fan and special low velocity uplift type drying tower. The major portion of the drying occurs in the first stage where relatively high temperatures are used. The moist gases and pulp are separated in a cyclone and the pulp is discharged into the second drying stage. This stage also consists of a fan and tower but the gas temperatures are much lower than those used in the first stage. At Kammerfos Bruk the pulp then goes through the last stage which consists of a fan and cyclone and which also operates with relatively low temperature gases.

The hot gases are produced by a direct fired air heater of special design which burns Bunker "C" fuel oil. This furnace can be installed either vertically or horizontally, depending on available space. In Kammerfos' case, it is installed horizontally and is located outdoors. This furnace produces hot gases which are completely smoke- and soot-free. The quench air used to dilute the hot gases from the furnace to the desired temperature is drawn from the groundwood mill through a large horizontal duct. This improves the efficiency of the dryer and avoids the necessity of mixing cold outdoor air directly with the hot gases.

Automatic Baling Press

A completely new type of pulp baling press was designed and is now installed in this mill. The pulp from this plant is shipped by water. Therefore, it was considered necessary to provide a baler which would produce finished bales of a density of 50 pounds per cubic foot to take advantage of lowest possible shipping rates. In this vertical press the pulp is pre-packed and the main piston descends forming a pulp sheet. This stroke is repeated until the proper size of the bale is formed. The bale of finished size and weight is then ejected automatically from the press. The total pressure exerted on the pulp is 700 tons and the bale size is 35 inches x 24 inches x 18 inches and weighs 435 pounds.

The bale is transferred to a scale and from there into a tying press. Standard wire is used for tying and to add strength and protection a sulphite sheet is added on top and bottom of the bale. The pulp bales are stored under cover before shipping. Most water shipments are made with the pulp stored below deck but storage at the paper mill is outdoors.

GENERAL DATA

Capacity: 100 a.d. tons per 24 hours
Installed power: 580 h.p.
Operating power: 348 h.p.
Heat balance: 1400 B.t.u. per pound of water evaporated
Oil consumption: 50 U.S. gallons per hour
Bale size: 35 x 24 x 18 inches
Bale weight: 435 pounds
Bale density: 50 pounds per cubic foot

TABLE I

PULP QUALITY—DRIED VERSUS MOIST GROUNDWOOD

Pulp quality report made on Kammerfos flash dried groundwood shipped to a commercial user as compared to wet groundwood previously shipped and the standard requirements of this use.

	Fibre-Flash Dried	Moist Groundwood	
	Unsoaked	Unsoaked	Standard
Burst factor, g. burst per cm² per g.s.m.	13.8	12.8	13.0
Breaking length, meters	2900	3030	2900
Tear factor, 100 (g. tear per g.s.m.)	38	38	45
Bulk, microns per g.s.m.	2.34	2.36	2.40
Density, g. per c.c.	0.43	0.42	0.42
Drainage Time, 60 g.s.m. sec., 20°C	18.3	22.6	20.0
Drainage Time, 250 g.s.m. sec., 20°C	133	148	
Canadian Freeness, c.c. at 20°C	100	99	100
Shives, %	0.20	0.17	0.20
Grading:			
Strength:	1	1	
Freeness:	1	1	
Shive content:	1	1	
Brightness G.E. %	59.8	60.0	
Moisture, original pulp, %	9.2	44.8	
Basic wt. of evaluation sheets b.d. g.s.m.	62.0	59.5	
Moisture in evaluation sheets %	13.4	12.6	
Testing conditions, % rel. hum. at °F	64/70	65/70	
Bauer-McNett			
Fractionation % retained on mesh 28	14.44	15.80	16.71
" " " " 48	18.22	18.76	18.78
" " " " 100	24.03	22.89	23.33
" " " " 200	10.78	10.02	10.33
through mesh 200	32.53	32.53 (Unsoaked)	30.85 (Soaked 4 hours)

No damage by usual handling is experienced and the condition of the bales as received by the ultimate customer is excellent.

The Fibre Flash drying plant is under complete instrument control. The pressures in the system are automatically balanced to keep conditions in each stage constant. Heat input and quenching air are automatically controlled to maintain the desired outlet moisture content. The instruments employed are pneumatic. All piping is trace-heated by electric cables to prevent freezing under outdoor conditions. A main control panel includes the control components plus all indicating and recording instruments which record inlet and outlet temperatures at all the drying stages as well as furnace outlet temperature. The press has a separate control panel where all the operating pressures are recorded and push buttons are provided for automatic or manual control of all the press functions.

Many Benefits Noted

Some of the advantages gained by the Kammerfos Bruk mill since the installation of the Fibre Flash unit are:

1. Freight saving due to the elimination of most of the water and the production of a high density bale.

2. Saving in anti-fungus chemicals.

3. Elimination of complaints and losses due to deterioration of wet pulp which can occur regardless of anti-fungus chemicals.

4. Longer shipping range and consequently increased market due to low freight cost and sterility of the product.

5. Possibility of a higher price for pulp and/or increased preference of the pulp due to ease of storage and sterility of product.

There are also advantages from the consumers standpoint as freight inland from unloading points is lower, deterioration and damage due to storage of the pulp is less for reasons given above.

Several thousand tons of dry pulp have been shipped to papermakers from Kammerfos Bruk and the comments received are very favorable. There has been no objection from users to the use of Fibre Flash dried pulp and they actually prefer and request this pulp. The mill is completely sold out of Fibre-Flash dried pulp for this year and all of next year which is remarkable considering the present conditions of the groundwood market and the normal

TABLE II

PULP QUALITY—FLASH-DRIED VS. WET GROUNDWOOD

Analysis done by Pulp and Paper Research Institute in Oslo, Norway of groundwood pulp from Kammerfos Bruk, on Feb. 23, 1960

Flash Dried Groundwood Pulp*

Dryness of pulp = 86.7% b.d. = 96.5% a.d.

	1	2	Average	1	2	Average
Soaking time, min.	10	10	10	10	10	10
Disintegration time	10	10	10	30	30	30
Can. Freeness, ml	115	120	117	100	100	100
°Schopper Riegler	64	64	64	67	67	67
Fiber group retained on mesh 25	24	24	24	23	21	22
Medium group	53	52	52	49	53	51
Fines through mesh 325	23	24	24	28	26	27
Breaking length, m	2730	2660	2700	3200	3330	3270
Burst factor	12.0	11.7	11.9	14.6	15.1	14.8
Tear factor	40	44	42	38	38	38
Bulk, cm³/g	2.25	2.21	2.23	2.23	2.19	2.11

Wet Groundwood Pulp*

Dryness of pulp = 50.9% b.d. = 56.5% a.d.

	1	2	Average	1	2	Average
Soaking time, min.	10	10	10	10	10	10
Distintegration time, min.	10	10	10	30	30	30
Can. Freeness, ml	105	110	107	100	98	99
°Schopper Riegler	67	66	66.5	69	69	69
Fiber group retained on mesh 25	25	26	26	25	26	26
Medium group	52	51	51	52	50	51
Fines through mesh 325	23	23	23	23	24	23
Breaking length, m	2840	2870	2850	3320	3180	3250
Burst factor	13.0	13.0	13.0	14.0	13.6	13.8
Tear factor	39	39	39	40	40	40
Bulk, cm³/g	2.27	2.29	2.28	2.30	2.29	2.29

*Comparison tests taken from single samples.

TABLE III
QUALITY OF FLASH DRIED G'WOOD

	Method of Investigation	P.F.I. by P. & P. Research Inst. in Oslo., Norway
	Disintegration Time, min.	10
Freeness	Drainage Time, sec. (in sheet machine)	45
Freeness	°Schopper-Riegler Freeness	65
Freeness	Canadian Freeness, ml.	—
Fractionation	Fiber Fraction (% retained mesh 25)	19
Fractionation	Medium Fraction (% retained mesh 25 & 325)	57
Fractionation	Finestuff Fraction (% passed mesh 325)	24
Fractionation	Shives	0.010
Strength	Breaking length, meters	2680
Strength	Burst Factor	12.4
Strength	Tear Factor	36
	Bulk, cm^3/per gram	2.17

policy of purchasing on a short term basis.

The Fibre-Flash dried groundwood pulp after more than seven months in storage is almost as easy to disintegrate as fresh wet pulp and the strength is conserved considerably better than in wet pulp which has been stored for the same period of time. Fibre-Flash pulp is easily refined, so that the strength may be developed when treated in a paper mill.

Quality-Plus Pulp

There is normally a slight decrease in freeness and in burst and breaking length together with an increase of tear upon Fibre Flash drying of mechanical pulp. Under full plant production over the last two years it has been shown that by compensating for this, mainly by changes in grinding procedures, pulp can be produced continuously at completely acceptable burst and freeness values. Table I is a report on some flash dried pulp shipped to a commercial user as compared to wet groundwood previously shipped by Kammerfos and the standard requirements of this particular pulp user. Table II gives an analysis by the Pulp and Paper Research Institute in Oslo, Norway, using the PFI method on Kammerfos pulp before and after drying. Although the burst is slightly lower after ten minutes disintegration of the flash dried pulp it is higher than the wet pulp after thirty minutes disintegration.

This adoption of the flash drying principal to the drying of pulp has been accomplished by the designing of the Fibre Flash drying system to the specific final physical and chemical characteristics of the pulp to be dried. By use of a multi-stage system, proper inlet and outlet temperatures and gas quantities, it is possible to produce consistently both mechanical and chemical pulp with completely satisfactory and acceptable mechanical and chemical characteristics. The free moisture is evaporated in the initial stage at a rapid rate using reasonably high inlet temperatures and a controlled low outlet temperature. The last portion of the moisture to be removed or the "bound" moisture as it is commonly called, is removed by the use of low inlet temperature which do not harm the pulp fibers which are more delicate at this stage of the drying process.

The Fibre Flash dried mechanical pulp, as produced at Kammerfos Bruk, disintegrates rapidly and this is shown in Table III where desintegration time of ten minutes was required on Fibre Flash dried groundwood.

Although the original plant was designed and evaluated on the basis of a final consistency of 90 per cent a.d. it will be noted that Kammerfos Bruk has produced pulp at 100 per cent a.d. as indicated in the analysis of the commercial shipment in Table IX. The pulp is normally dried to 95 per cent a.d. at Kammerfos Bruk as pressing and handling is easier than at 100 per cent a.d.

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Something Can Be Done About Finishing—VIII

How Sales Operations Can Improve Finishing Efficiency

A well-planned and co-ordinated sales policy can help reduce finishing costs and at the same time improve service to the customers.

This article deals with the contribution which can be made towards reducing excessive finishing costs in a writing and printing grade paper mill as did the previous ones in this series. Here we will discuss the role of a well-planned and co-ordinated sales policy and the assistance which the sales personnel can provide. There are several points of view here. One predominately held by sales representatives when they are falling short of their quotas, and another by marketing experts, forward-looking sales managers and mill executives who have the long view. There is a third attitude which may be held by finishing superintendents, foremen and production planning and traffic executives. If the latter could dictate the sales policy, minimum order quantities of each item would be carloads, and delivery promises would be extended to one month. All packages would be the same type and plain (not printed with grade identity), not more than ten sizes of sheets, of which eight sizes are untrimmed and six sizes sold by weight (uncounted), not more than one size of plain core in rolls of not more than two diameters and not more than five lengths.

The sales policy discussed here is neither that desired by the mill superintendent nor the salesman but the manager who must provide customer service and competitive costs.

The ideas presented here are from neither the first-mentioned nor the last group. The author cannot subscribe to his co-workers' impractical dreams anymore than agree to the tearing up of balanced production schedules every time a salesman insists that a 500-lb. order for lavender ripple must be put in the carload scheduled to be dispatched that night by slow freight for a destination 500 miles away.

Rigid Policy Not Possible

It is quite possible that no rigid sales policy can be adopted that will obtain *all* of the proposals discussed in the following paragraphs. It may be that a discussion of the excess finishing costs saved by adopting some of the ideas will convince the reader that some sales policy ideas can be adopted which will reduce finishing costs without hurting customer service. Let us consider some of the customer requests and sales policy features that result in excessive finishing costs.

Expensive Small Order Practices

The sales policy that provides no upcharge for finishing four cartons each of four different items, results in the processing of repetitive orders for the same item within the two weeks that it takes to accummulate a carload of paper for that customer. Hence, the excessive cost of preparing and finishing two separate orders for the same item does not get the paper on its way to the customer any earlier than it would if the two orders were combined into one.

The sales policy that provides for no upcharge for supplying a pallet and the gluing or strapping of more than one item on the pallet results in the rehandling of each carton in the warehouse instead of eliminating this by making up complete pallet loads in the finishing department. Also, when the mixed load arrives at the customer's warehouse, the different items have to be unloaded into the allocated areas for each of the several items on the load. If there was an upcharge which would cover the extra cost of the pallet and rehandling, there would be a reduction in the proportion of mixed loads which, at present, are in the majority.

Inducements for Larger Orders

The above are examples of the effect of a sales policy which does *not* sufficiently encourage the customer to save money by sending in orders of each item which are large enough to permit reasonable runs on the paper machine or to allow the finishing department to accumulate orders of one size until more reasonable runs can be processed together. It is not going to upset the economy of the finishing department to be required to process up to ten per cent of the orders on off-line operations but when fifty per cent of the orders are too small and are required to be processed so quickly that there can be no delay to accumulate enough of one size to assign several small orders of one size to a production line for one set up, it does seriously increase the total cost. This comes about because the forty per cent of short orders have to be assigned to the production line whenever the off line operations are overloaded. This, of course, upsets the efficiency of the lines but also delays production of larger blocks of tonnage which must be held up to make capacity available. It will be agreed that the customers who ordered the large blocks deserve the best treatment.

Early Order Placing

The earlier the order is placed, the better the customer service and the lower the cost. Efforts of the sales department to obtain the co-operation of customers to place a higher percentage of their orders earlier, really pays off in the papermaking and finishing departments because their operations can be planned thoroughly. No extra purchasing and procurement expense is involved in obtaining all the packing supplies required. The accumulation of orders of one grade is possible and longer runs result with resultant increase in efficiency. The customer benefits from being able to depend upon delivery on time and freedom from human error which occurs when his order is processed on a crash program.

Sales and Inventory Analysis

Careful, up-to-date analyses of sales of each item and the application of trends to the size of inventory carried in stock of each item works beneficially for both the finishing department and the customer. If sales of an item are increasing and the inventory is adjusted upward in direct proportion, the length of run can be increased instead of making several short runs to fill replenishment orders. It is obvious that the larger the inventory carried of an item, the better the customer service available.

Promoting Use of Rolls

A basic improvement can be made by persistent effort of sales departments to encourage customers to install roll feeds on their printing presses. This saves the trim waste which occurs at the cutter and at the trimmer. It also saves the portion of the useable paper which is thrown out with the defective during inspection in the cutting and trimming operations. Probably it is not feasible to expect even 50 per cent of the printing tonnage to be sold in rolls; however, it is doubtful whether more than one per cent is at present sold in rolls. This subject is worthy of a great deal of attention by paper mill executives, but the greatest contribution can be made by top level sales effort.

Standard Packaging Essential

Lack of a definite sales policy on packaging can be disastrous to finishing costs. If the customer is not encouraged to use standard packaging, he obviously chooses one which may appeal to the man in charge of receiving at his plant but which does not appeal to the rest of the mill's customers. Then each customer's order requires special packaging with obvious extra costs for finishing. In addition, the mill cannot carry standard skids, cartons or wrappers and labels in stock to be ready for the orders. This means that service is slower due to the delay which occurs while the special supplies are being obtained. However, it may surprise many sales managers, who think their company has a standard carton package and skid or pallet load design, to learn how many special packaging, labelling and stencilling instructions are required. It will also surprise the mill manager of the same company to learn how much these small special requests add to the cost of finishing. The suggestion is offered that a standard policy be established and the exceptions be limited to large orders. If sufficient care is taken in arriving at the standard designs, the customers will not be disappointed.

It may surprise sales managers, who think their company has a standard carton package, skid or pallet load design, to learn how many special packaging, labelling and stencilling instructions are required.

Role of Good Communications

Good communication from the sales department to the finishing department can reduce finishing costs. Complete and accurate specification of the paper required, packaging and marking requirements, and shipping instructions, will prevent too frequent re-packing, re-labelling, re-marking and in some cases, re-shipment. This is not only attractive to the mill, but a definite contribution to improved customer service.

Abuse of the Rush Order

The problem of rush orders requires very careful consideration. It is possible that sometimes a sales representative over-emphasizes the urgency with which his order should be treated. Extreme cases have come to my attention where rush orders were processed on a crash program at the direction of the field salesman but when the truck driver arrived at the warehouse, he was told there was no room for the paper, they did not want it, and to bring it back later that month. This is a case where the customer was certainly unhappy with early arrival of paper that was delivered at extra cost incurred by the priority rating given to a rush order. At the same time, other customers, whose orders were delayed by the "cut in" of the rush order, were made dissatisfied because their orders were late in delivery.

This illustration should be balanced by a case which may result in more rush orders than necessary. In this instance, an order was promised for delivery to a customer on a certain date but was not delivered. This happened three times within two weeks. So, the next order the salesman took, he decided to make sure that the mill would pay more attention to meeting their obligation so he put a rush delivery tag on the order. Thus mill personnel do have part of the responsibility for the excess number of rush orders submitted.

Rush orders cause more excess cost in the finishing department than is generally realized and some of the rush orders, if investigated, would show that they are not as important to a customer as the order clerk might imply. Certainly at least he should be asked if he will accept a delay on a previous order to facilitate the rush delivery of the new order.

Sales departments require more detailed cost information to obtain their co-operation in reducing finishing costs.

Cost Information for Sales

On the whole, the sales departments do as well as can be expected considering the information and the manner in which it is generally furnished to them. Probably, if they were not "blasted" frequently because they pass along customer requests for special attention, they would not be on the defensive. Also, if specific cost information on special requests were furnished to them, they would be more helpful. Certainly, this can be improved upon and closer liaison maintained to mutually understand both finishing problems on one hand and sales problems on the other.

MAINTENANCE SERIES
NUMBER 19

Ventilation Systems Offer Years of Service With Little Attention

Probably requiring the most maintenance are the steam heater coils. Here, corrosion and freezing are the chief concern. Other maintenance check points are: fans, dampers, economizers, hoods, and filters.

C. H. Guischard,
Sales Engineer,
J. O. Ross Engineering Div.,
Midland-Ross Corp.

As essential as the air systems are to the operation of papermaking, it is unusual that this equipment needs relatively little maintenance attention.

Described in the following paragraphs are the main areas of concern. You'll see in reading, that with the proper maintenance, the equipment will give you years of trouble-free service.

Heater Coils Require Most

The point that probably requires the most maintenance is the steam heater coils. Here the chief culprits are corrosion and freezing. Corrosion is usually caused by oxygen or carbon dioxide carried over by the steam. These gases become active when in solution. Oxygen either comes from the water or enters the condensate system and can be removed by de-aerating. The corrosive action is galvanic and causes pitting. Oxygen can also be removed by using reducing agents, either sodium sulphite to form sodium sulphate or hydrazine, which reacts with oxygen to form water and nitrogen. Carbon dioxide originates, mainly, from the bi-carbonate and carbonates alkalinity of the boiler makeup water. The carbon dioxide dissolves in water to form carbonic acid which causes either a searing action at the bottom of the pipes or thinning of the pipe walls. One method of dealing with carbonic acid corrosion in the condensate system is to inject a filming amine into the steam main, which then forms a non-wettable film on the inside surface of the equipment and pipework.

Corrosion problems are best dealt with by water treatment specialists.

To avoid freezing in the coils, maintain at least 5 p.s.i. steam pressure at all times. Where automatic temperature controls are used, an additional thermostat located in the fresh air inlets to the coils should open the control valve to admit steam, when the air temperature drops to 35 to 40°F. Means should be provided to shut off the fresh air supply if steam is shut off, thus preventing freezing the coils. Steam traps should be carefully inspected. Air vents should be checked and petcocks left in the cracked-open position. When starting a system using freezing air, the steam should be admitted at least 5 minutes before the fan is started. Proper piping of coils is essential to reduce the possibility of condensate buildup.

A final note on the heater coils is the suggestion that you make it a point to clean and check the heater coils and piping systems at regular intervals to insure the proper passage of steam and to maintain the proper amount of heat transfer.

Fans, Dampers Need Little

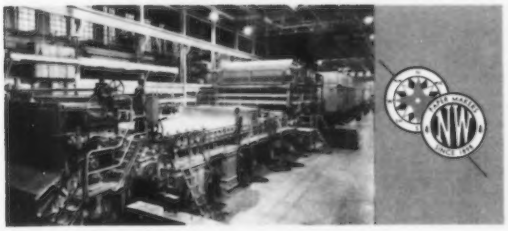
A very important part of any ventilating system, but which requires little attention, is the fan. Occasional lubrication of the bearings, customary maintenance of the V-belts, spot-checks on the blades for any deposits that might have collected and keeping the fan wheel in balance are usually all that is required.

Where louver dampers are used on the inlet or outlet side of the fan, they are usually piston-operated, and should be inspected periodically to see that all blades move freely and through the full range of travel, as originally set. The sprockets and sprocket chains should

S. R. CHRISTENSEN

Dryer Section, No. 6 Fine Papers Machine, the Northwest Paper Company, Brainerd, Minnesota

The Northwest Paper Company



Installation and successful start-up of No. 6 machine completed the current expansion and renovation program at the Northwest Paper Company's Brainerd, Minnesota, mill. This 200″ Beloit Fourdrinier machine has increased daily production of the famous Northwest Pedigreed Papers from 80 to over 200 tons a day. For further details and views, please turn the page.

details of Northwest's new No. 6 machine at Brainerd, Minnesota Designed to run in the 2000 fpm range, this 200″ Beloit machine produces Northwest's high-grade writing, printing, and converting papers. Addition of No. 6 machine has tripled production at the Brainerd mill. **(a)** Smoothing press following third suction press; **(b)** straight-through press featuring automatic suction pick-up and sheet-transfer arrangement; **(c)** Beloit pneumatic reel designed to wind 60″ parent rolls; **(d)** motor-operated Beloit streamflow valve; **(e)** Jones-Beloit benchboard controls at press position; **(f)** wet-end Beloit differential-drive units; **(g)** twin open-side Beloit calender stack.

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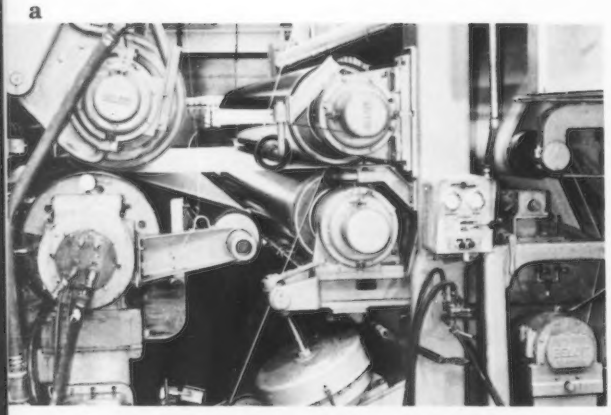

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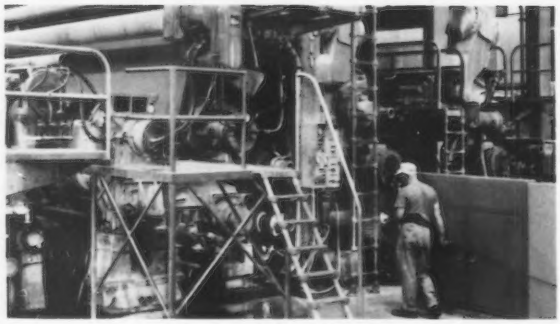

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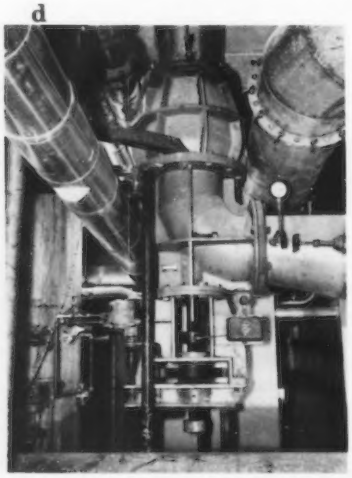

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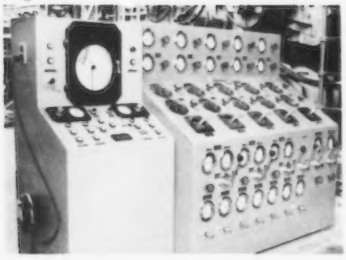

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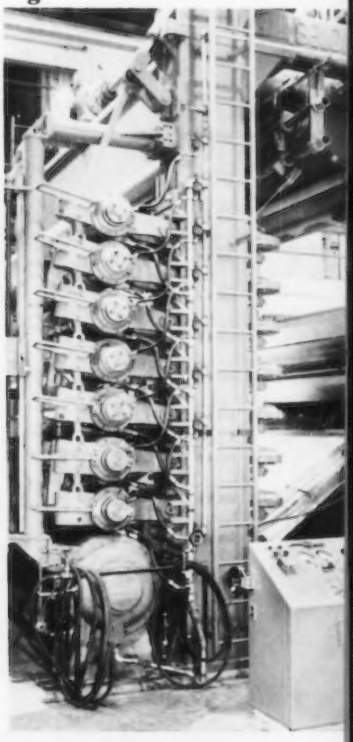

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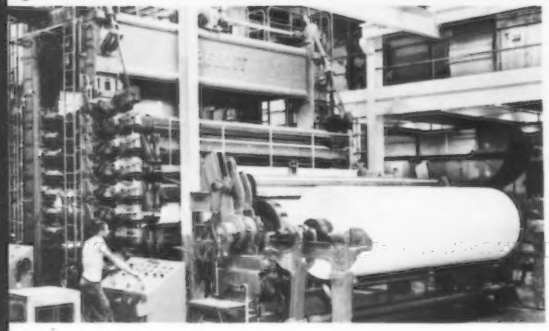

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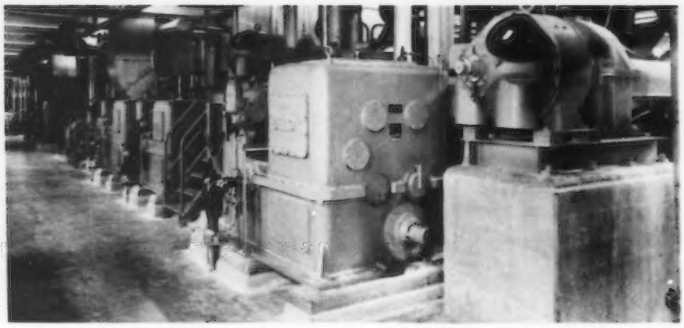

This insert lithographed on Northwest Velopaque Text.

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be lubricated when necessary, and at the same time, the chains can be inspected to assure contact with all sprockets.

Corrosive action is galvanic and causes pitting, and is the result of oxygen and carbon dioxide being carried over by the steam into the steam heater coils.

Economizers and Hoods

Economizer units should be checked periodically for leaks and any accumulation of dust and foreign matter on the fins. The economizers should have the fresh air passages cleaned with compressed air occasionally and the vapor side should be washed down with high pressure water, periodically depending on the accumulation of fluff. When water heating is obtained with an economizer arrangement, the accumulation of fluff on the economizer tubes is diminished.

If totally-enclosed hoods are part of your ventilation system, they should be inspected too. Here, careful attention should be given to the cables on the lifting panels, frequently a slack develops caused by the stretching of the cable and can be fixed simply by tightening the turn buckles. Also, regarding the totally-enclosed hoods, keep the bearings greased and the gear box oiled on the lifting apparatus. The lining of electric brakes should be checked frequently and replaced when they are worn.

Filters and Controls

With air operated controllers with dewcell units for dew point control, the dewcell element should be cleaned and re-coated with lithium chloride as often as required by the particular installations, to maintain accurate readings and control.

Filters of the washable type should be removed when dirty, and washed down. After cleaning the filter cells, they should be dipped in "TE" Viscosene to insure an adequate dirt pick-up coating. The frequency of cleaning depends upon the amount of dust in the air. Extra cells are usually provided for cleaning by the rotation method, wherein a few cells are cleaned each week rather than attempting to clean all the filters at one time. Automatic type filters should be inspected to ascertain whether filter media is clean and that the unit is functioning properly.

That is, basically, all the maintenance required for the air systems. Set up a schedule of inspection checks for the equipment, give it the proper care and attention and you will find that it is not hard to manage. In fact . . . it will run forever!

The Effect of Drying on Pulp Strength

R. C. Klye,
Technical Superintendent, Botany Mill,
Australian Paper Manufacturers, Ltd.

To take advantage of the potential savings in freight costs, Australian Paper Manufacturers, Ltd., installed a Flakt drier at the end of an existing Kamyr wet-lap machine. Work was carried out to establish the magnitude of the strength losses incurred by both wet-lapping and by subsequent Flakt-drying of eucalypt kraft pulps.

A review of published data has shown a large variation in reported losses of bursting and tensile strengths for pulps beaten after drying. All agree that unbeaten pulp strengths are greatly reduced on drying. Several workers reported losses for beaten pulp of about 10 per cent but others indicated losses of from 7 to 35 per cent.

Investigations at Maryvale mill indicated that beaten pulp strengths were affected by both wet-lapping and Flakt-drying prior to beating. At a freeness corresponding to well-beaten mill pulp, burst factor was reduced by 10-15 per cent on predrying to about 75 per cent O.D. content, breaking length was reduced by about 10 per cent and tear factor was reduced by less than 5 per cent. Generally, beating rate of dried pulp was slower and the maximum bursting strength and tensile strength attained on beating were lower than for undried pulp. Both unbleached and bleached eucalypt kraft pulps showed the same effects. A mill beater test confirmed the laboratory findings for unbleached eucalypt kraft pulp.

It appeared that the relationship between potential strength losses and degree of moisture removal was not linear. Rate of strength loss increased at moisture contents below about 35 per cent. It is not known to what extent the temperature of drying influences this rate, but it seems probable that losses increase with increasing temperature.

The well-recognized loss of strength of beaten pulp when papered and then re-slushed is a related phenomenon. This loss of strength is primarily a function of water removal. Compared with the original undried paper stock, re-slushed dry broke loses 30 per cent or more of its bursting strength and 20 per cent or more of its tensile strength. Some of this strength loss can be regained on beating but this is done at the expense of drainage rate and tearing strength.

Laboratory work has shown that successive drying and re-slushing of handsheets made from beaten pulp gives progressive strength losses, both burst factor and tear factor approaching the original unbeaten pulp strengths. The loss in bursting strength of well-beaten eucalypt stock after one drying and re-slushing cycle approached 60 per cent on occasions. Some incomplete laboratory work indicated that partial water removal by pressing, even at moisture contents as high as 80 per cent, resulted in loss of bursting strength when the pulp was re-slushed and formed into handsheets.

The practical import is that pulp should be used without drying so far as is possible and in this respect an integrated pulp and paper mill has some advantage over a separate paper mill. Consistent with good paper machine operating practice, broke should preferably be retained in the wet form so that it may be re-used without additional beating necessary to restore the strength lost in drying.

From a paper presented at the 1960 annual conference of the Australian Pulp and Paper Industry Technical Ass'n.

NEW EQUIPMENT & SUPPLIES

Packing Life Increased 10-Fold

Possessing what is said to be unique chemical and abrasion resistance, a square-plaited packing, designed expressly for the paper industry, has reduced packing replacement by approximately 80 per cent. Where 11 packing sets were formerly used over a 20-week period, nine have been eliminated. Production capacity loss caused by idle machinery has also been considerably reduced. Because of the packing's resistance to friction and heat, less scoring of shafts and sleeves has also resulted.

Hydrapulpers, jordans and breaker traps in the Eastern division of a large paper manufacturer, now enjoy ten times their previous continuous operation operating life because of the packing, denoted as R/M packing. In all of these machines, the stock is progressively refined under pressure, heat and chemical action, preparatory to entering the paper machine chest for actual pulp board production.

Before R/M packings were adopted, the packings used were made of braided asbestos with a standard lubricant. Because of intense frictional and abrasive attacks, the lubricant of this packing was progressively dissipated, usually within two weeks from the date of installation. As the packing lost its lubricant, continual adjustment was needed to tighten the pressure on the packing. The constant tightening gradually squeezed the lubricant from the packing, causing dry spots which scored moving parts. Allied to this problem was continual leaking and spilling of hot fluids and shredded paper on the floor, causing stock waste and lost time in cleaning up the floor. Spray caused by faulty packing also splashed workers and work areas, creating uncomfortable and hazardous operating conditions. These conditions are reported to have since been eliminated through the use of R/M packings.

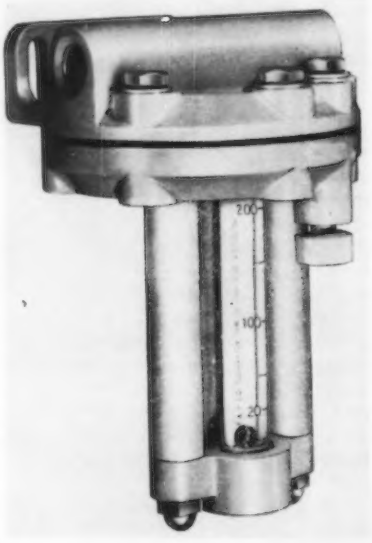
R/M 363 packings are constructed of square-plaited braided asbestos yarn. Their chief advantage, it is said, is that they have a combination of two lubricants: an initial impregnated transient lubricant and a neutral, graphite free surface lubricant, which continues to provide needed protection after the transient lubricant has been dissipated. The R/M packing surface contains a solid, chemically resistant lubricant with a very low co-efficient of friction. This, it is said, provides a surface that is virtually impervious to chemical attack, except by a few unusual chemical elements, which will not deteriorate and has excellent lubricating properties.

With R/M packing, requiring change no more frequently than every 20 weeks the company has saved at least nine packing changes, or a minimum of 31 hours; hours devotable to other problems. Another benefit is increased shaft life if a packing runs for longer periods of time. Each adjustment means the packing has begun to fail, causing progressively greater abrasion and friction on the shaft. R/M packing also protects the packing sleeve, as the metal bits and rough stock flakes which previously worked their way past the faulty packing and scored both the shaft sleeve and the shaft can no longer get through.

Acid Feeder Is Semi-Automatic

A semi-automatic wide range feeder that continuously feeds, meters, and regulates a flow of sulphuric acid into a liquid stream, and is itself resistant to chemical attack, has been introduced by Fischer & Porter Co. This feeder, designated as Model 70M2022, has an integral ejector and is equipped with special sulphuric acid resistant diaphragms and O-rings. Its lance-type filtering assembly uses a woven fiberglass filtering element.

Metering is by the variable-area method with a direct reading linear scale. The flow rate may be adjusted by turning the needle valve on the front of the feeder. Once set, constant flow is maintained, despite variations in supply pressure, by means of a built-in differential pres-



sure regulator. Four models with capacities ranging from 0.4 to 5 gallons per day to 20-200 gallons per day are available. Maximum operating temperature is 100°F. For additional information, write to Fischer & Porter Co., 493 Jacksonville Road, Warminster, Pa.

Lift Truck Kicker-Clamp Increases Log Handling

A combined log kicker and clamp attachment for 2- and 4-wheel drive Hyster lift trucks in the 15,000-

20,000 pound capacity range has been introduced by Hyster Co., P.O. Box 847, Danville, Ill. Designed to increase log handling, the hydraulically-operated attachment mounts on Hyster Challenger 150, 160, 180 and 200 lift trucks. The unit is available as a kicker only, as a clamp only, or as a kicker-clamp combination.

The kicker utilizes a pair of push-off arms to roll logs off load arms. Clamp arms which have a maximum opening of 144 inches, swing through a 105-degree arc to hold logs on the forks. With kicker and clamp combined, the same hydraulic cylinders operate both sets of arms in sequence. As the clamp begins to open, the kicker is inactive. As clamp arms continue their opening swing, the kicker arms are automatically actuated to push the logs off the forks.

Quick removal of two pins disconnects the kicker, allowing the clamp arms to open fully without operating the push-off arms. This enables the lift truck to handle standard loads which do not require the clamp. Net capacity of the kicker-clamp combination, at a 24-inch load center, ranges from 11,800 pounds with a Hyster Challenger 150 lift truck to 17,400 pounds with a Hyster Challenger 200 lift truck. Capacities are greater when only the kicker or the clamp are mounted.

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So, plan ahead and investigate the profitable opportunities for expansion or relocation in the Coastal 6. A letter, phone call, or wire will put our industrial specialists to work at once helping you find the right site for your plant. No obligation. All inquiries held confidential.

Direct Inquiries to:

R. P. JOBB
Assistant Vice-President
Department G-60
Atlantic Coast Line Railroad
Wilmington, N. C.

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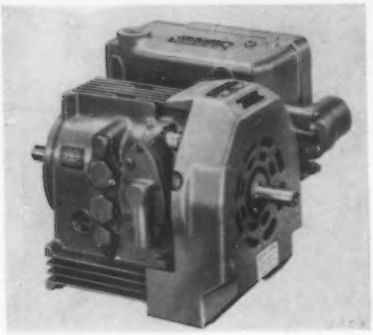
Serving the Coastal 6 . .



Transmissions Adjust Small Drive Speeds

Oilgear's "Any-Speed" transmissions are said to convert any constant speed input power into an infinitely adjustable output speed. Integral with these units is a gear pump for supercharge, control and auxiliary service, a cooling fan, a fluid reservoir case, and over-load relief valves. All working parts are pressure or flood lubricated and totally enclosed for long life protection.

Designed for applications of one horsepower or less, the units consume power only in proportion to work performed. There are no restricted flow or directional control valves used. Potential uses for these transmissions include metering pumps, circulating pumps, and other small drives.

Specifications: Input speed 1750 r.p.m. Output speed (at normal torque) variable up to 1650 r.p.m. Starting torque 62 lb. in. Normal torque 45 lb. in. Peak torque 67 lb. in. Approximate output 1 h.p. Net weight 90 lbs. Length 15 in., Width 14 in., Height 10¼ in. Standard transmission and speed control devices for direct or remote control, manual or automatic operation, open or closed loop control systems are available.

For more information write to The Oilgear Co., 15712 W. Pierce St., Milwaukee 4, Wis.

Seated Butterfly Valve Corrosion-Resistant

For flow applications where positive, drop-tight shut off and/or resistance to corrosion are important requisites, the Resilient Seated Butterfly Valve is offered. It is manufactured by W. S. Rockwell Co., Fairfield, Conn.

The disc travels from full open to full closed position in only a quarter of a revolution, with equalized pressure on the disc. There are no mating metal surfaces. The disc seats against the resilient seat liner of molded, abrasion-resistant rubber or synthetic elastomers. This "Keelok" liner is easily replaceable on the job.

The cast disc is externally ribbed and shaped for high differential line pressures. It is taper-pinned to an oversized through shaft of full diameter throughout its entire length. Thus it will withstand water hammer, hydraulic shock and vibration several times the rated load. The shaft extends through bronze nongalling bushings. The valve operating mechanism, manual or automatic, is secured to the shaft by a shear pin designed to fail should a large obstruction render the valve

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53-01 GRAND AVENUE, MASPETH 78, NEW YORK • EVERGREEN 6-2565
STATION & HALLECK STREETS, BOSTON 20, MASS. • GARRISON 7-5720
SALES OFFICE: 250 PARK AVENUE, NEW YORK 17, NEW YORK • PLAZA 9-7840

inoperable. The valve components are made of any desired combination of metals. Available in sizes—2 inches to 36 inches, and in both 50-lb. and 150-lb. pressure ratings.

Log Grapple Electrically Powered

A log grapple that is electrically actuated, is now available for use on LeTourneau electrically powered

Log Loaders with either a heel or straight type boom, and on single line fixed crane installations where 220/440 volt power is available.

Among the features to be found on this model is a small, electric motor and gearbox, mounted on the grapple, which actuates the cable mechanism that opens and closes the arms.

Power for the grapple motor is supplied from either the main power plant of the loader, or from standard commercial power in the case of fixed crane installations. An automatic reel mounted on the boom pays out and takes up the rubber covered electric cable that carries power to the grapple motor.

The grapple arms open 65 inches wide to handle the largest logs and close to 0 inches to facilitate handling of poles and smaller timber. When the load is in the air the grapple remains closed in the same manner as a conventional "two line" grapple or clam. This action is said to assure full safety during swing operations. More information about the "Electric Powered" Log Grapple is available by writing R. G. LeTourneau, Inc., 2399 South MacArthur, Longview, Tex.

Prices of Fibers

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$ 82.50/ 90.00	$82.50/ 90.00	§$90.00/ —	§$80.00/ —	§$90.00/ —
Bleached Gw'd	$ 97.50/100.00	$97.50/100.00			
Kraft, Blchd.	‡152.00/160.00				§157.50/ —
Kraft, Blchd. Hdwd.	152.00/ —		140.00/ —		
Kraft, Semi-bleached.	140.00/145.00				
Kraft, Unbl.	117.50/125.00	125.00/130.00	†125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡150.00/155.00	‡150.00/155.00	•155.00/ —	•155.00/ —	155.00/ —
Sulphite, Bl. Hdwd.	150.00/ —				
Sulphite, Unblchd.	135.00/ —	135.00/ —	†135.00/ —	•135.00/ —	
Sulphite, Unb'l. Gl'sn		140.00/ —	†134.00/ —		
Soda, Blchd.	147.00/150.00	150.00/ —			

§ On Dock Atlantic Ports. • Freight allowed. † Varying Freight Allowances.
‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS
WEEK ENDED MAY 24

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	n.a.
3	$7.50/7.00	$8.50/7.75	$7.50/7.00	n.a.
4	7.00/6.25	7.25/6.25	6.50/6.25	8.50/ —
5	6.25/5.75	6.00/5.50	6.00/5.50	8.00/7.00
6	5.75/4.75	5.25/5.00	5.25/5.00	6.50/4.50
7	4.75/4.25	4.50/4.00	4.75/4.00	4.25/4.00

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	June 6	June 6	June	June
No. 1 Mixed Paper	$ 7.00/ 9.00	9.00/ 11.00	6.00/ —	12.00/ 13.00
No. 1 News	12.00/ 13.00	12.00/ 13.00	13.00/ —	12.00/ —
Overissue News (Lg. size)	11.00/ 13.00	11.00/ 13.00	18.00/ —	18.00/ 19.00
Mill Wrappers	19.00/ 22.00	13.00/ 15.00	9.00/ —	12.00/ 14.00
Old Corrugated Containers	22.00/ 23.00	19.50/ 20.00	18.00/ —	23.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	30.00/ —	55.00/ —
New Double Kr. Ld. Corr. Cuts	32.50/ 35.00	35.00/ —	35.00/ —	35.00/ —
(Semi-chem. medium)	47.50/ —	47.50/ —	45.00/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	57.50/ —	— / —
New Br. Kraft, Env. Cuts	70.00/ 75.00	70.00/ 75.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Prntd.	55.00/ 60.00	55.00/ 60.00	52.50/ —	55.00/ —
New Br. Kr. Bag Waste Unprintd.	60.00/ 65.00	65.00/ 75.00	60.00/ —	60.00/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	25.00/ 30.00	17.00/ —	32.50/ 35.00
White Newsblanks	47.50/ 52.50	47.50/ 52.50	35.00/ —	55.00/ —
No. 1 Soft White Shvs.	60.00/ 65.00	57.50/ 60.00	60.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	75.00/ 85.00	70.00/ —	— / —
Hd. White Shvs.	85.00/ 90.00	90.00/100.00	85.00/ —	90.00/ 95.00
Hd. White nv. Cuts	100.00/105.00	105.00/110.00	90.00/ —	110.00/113.00
Col. Tab. Cards	42.50/ 45.00	42.50/ 45.00	45.00/ —	40.00/ 45.00
Manila Tab. Cards	62.50/ 65.00	62.50/ 65.00	65.00/ —	70.00/ 75.00
No. 1 Col. Ledger	35.00/ 40.00	35.00/ 40.00	40.00/ —	27.00/ 29.50
White Ledger	48.50/ 52.50	50.00/ 55.00	50.00/ —	50.00/ 55.00
Mixed Book & Mag.†	22.00/ 25.00	— / —	12.50/ —	— / —
No. 1 Books‡	16.50/ 19.00	14.50/ 16.50	27.50/ —	13.50/ 14.00

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.

PJT NEWS OF SUPPLIERS

Geigy Dyestuffs, Division of Geigy Chemical Corp. of Ardsley, N. Y., has moved its Chicago branch office to a new building at 5677 North Northwest Highway.

Geigy Dyestuffs has had a branch office for 14 years in quarters west of Chicago' Loop, which facilities have been outgrown by the expansion of the company's business.

Warren B. Broadbent is Geigy Dyestuffs' Chicago branch manager.

Hills-McCanna Corp., Chicago, Ill., has appointed Metal Goods Corp. and Geigher Pipe & Supply Co., both of St. Louis, Mo., authorized stock distributors for Hills-McCanna ball valves and diaphragm valves.

Rust Engineering Co., Pittsburgh, has elected George M. Rust as an executive vice president. At the same time. J. Bolling Sullivan, Jr., and John W. Clark were made vice presidents.

G. M. Rust is in charge of the Birmingham office. He is president and a director of the Birmingham Clay Products Co. and Alabama Brick and Concrete Co. as well as a vice president and a director of Rust's subsidiary companies. He joined the company in 1931 after graduating from Lehigh University in mechanical engineering.

J. Bolling Sullivan, Jr., was chief project manager. He joined Rust in 1955 and holds two degrees from Cornell University.

John W. Clark began work for Rust in 1942 in the tax and legal department. In 1952, he became assistant secretary and in addition was in charge of personnel in Rust's Birmingham office. Mr. Clark holds degrees from Dickinson College and from the University of Pittsburgh.

Cameron Machine Co., Dover, N. J., has announced the formation of a subsidiary company, Cameron do Brasil Industria e Comercio Ltda. The new company with main offices at Rua 24 de Maio 104, Sao Paulo, will manufacture and distribute Cameron slitting and roll winding machines and auxiliary roll production equipment. Production is now under way for the Cameron Model 550 duplex center winder and the Model 400 two drum winder.

Paul Chessare, who has been associated with the parent company for over 15 years, has been appointed general manager of the newly formed company. Mr. Chessare most recently has served in the capacity of divisional sales manager. Prior to that he had been senior service engineer.

In addition to Cameron equipment, Cameron do Brazil, will manufacture and distribute the complete line of the Clark-Aiken Co., including cutter-layboys, rollstands and finishing room handling equipment.

Dorr-Oliver Inc., Stamford, Conn., in one of a series of organizational moves to provide sales and engineering services in depth to its customers in many industries, has set up a new Pulp and Paper Sales Division within its industrial sales area. This functional grouping corresponds to similar working units within the Research, Development and Engineering departments. Under the direction of Gordon M. Gordwood, the new sales division will be responsible for equipment and process sales to Dorr-Oliver customers in the expanding pulp and paper industry.

In addition to Mr. Girdwood, the new pulp and paper division comprises I. W. Johnston, assistant division manager, who will serve the Southeastern portion of the country from the D-O Atlanta office at 900 Peach Tree Street, N. E.; R. E. Bodette, who will serve the Northeastern portion of the country from the D-O Stamford office; T. B. Calhoun, who will serve the Gulf Coast States from the D-O Fairhope, Ala., office; R. M. Schneble, who will serve the North Central area from Roselle, Ill.; W. F. Wangler, who will serve the Middle West from Fort Wayne, Ind.; Walter Christiani, who will serve the Western section of the country from the D-O Oakland, Calif., office at 2900 Glascock Street; and F. L. Schorken, sales specialist and R. J. Spangenberg, staff assistant, both of whom will make their headquarters at the Stamford office.

V. C. Harold, Jr.

R. V. Bardsley

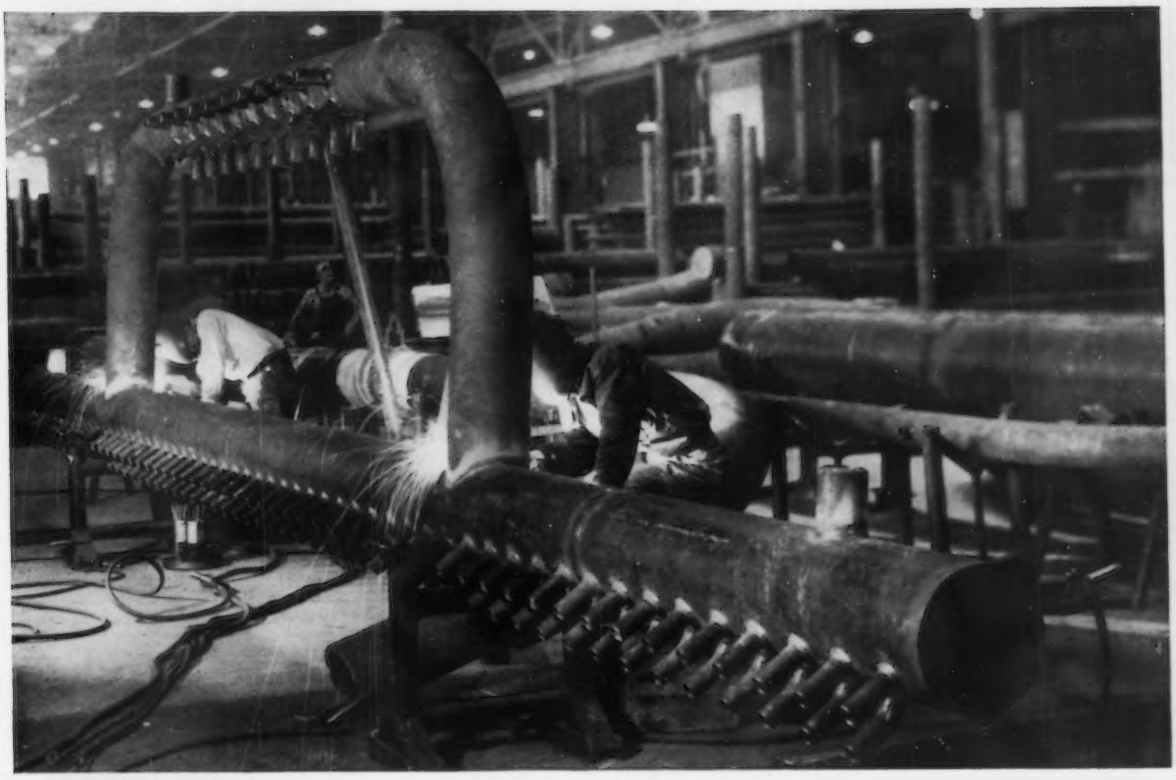
The Flintkote Co., announces that Vincent C. Harold, Jr., of Clifton, N. J., has joined the sales staff of the Industrial Products department.

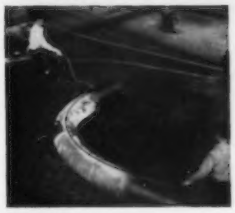
Mr. Harold will handle asphalt emulsion sales for the paper and fiber board industry and specialty industrial products. He previously had been with Flintkote's research division for 14 years and worked on developments in asphalt emulsions and cutbacks.

Huyck Felt Co., Division of Huyck Corp., Rensselaer, N. Y., announces the appointment of Robert Victor Bardsley as machinery development engineer in charge of the Machinery Development department.

Mr. Bardsley was graduated from the University of Rhode Island with a B.S. in electrical engineering. His last position was that of design engineer, Research Division, Leesona

EXACTLY as you want it . . .





Bending

Stress-relieving

Ultrasonic Testing

Shop-fabricated piping by Grinnell

With Grinnell shop-fabricated piping — cutting, fitting, welding, and assembly "on location" is reduced to an absolute minimum. That can be important. For when these operations are performed under the less-than-ideal conditions existing in the field, there is always the possibility of less-than-perfect results. For example, errors in cutting or fitting can occur — or welds can contain slight imperfections, which may be difficult to detect and correct with field equipment.

In Grinnell shops, on the other hand, whole sections of complex piping are assembled *exactly* as you want it — with every critical point checked with the latest equipment and by the most modern methods. When these sections arrive on site, they go up fast and *right*.

With Grinnell shop-fabrication too, there are no unforeseen costs. Included in the price (which is determined in advance) are such items of expense as: interpretive engineering, shop sketches and planning, procurement of materials, power services, expendable tools and supplies. There are no charges for waste material.

Consider the quality of the finished job, and final cost. Then consult Grinnell on *your* next piping installation.

To Engineering Societies and Departments: A 30-minute color sound film showing the quality and economy of Grinnell Shop-Fabrication of all classes of piping is available without charge. Contact your local Grinnell Supply Sales Office, or write to Grinnell Company, Inc. 216 West Exchange St., Providence, R. I.

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Corp., formerly Universal Winding Co., Providence, R. I., where he worked in the successful development of the Leesona Unifil-Loom Mounted Filling Winder.

Manchester Machine Co., Middletown, Ohio, has named Stevens Mill Supply Co., Port Hueneme, Calif., as its West Coast representative for engineering and service. Stevens will service Manchester customers in California, Arizona, Nevada and Utah.

Stevens is a family-owned business headed by Robert W. Stevens, well-known consultant with over 40 years experience in the paper industry. His son, Robert, Jr., also has had wide experience in the paper industry starting in 1947 when he joined the Bechtel Corp. as a coordinating engineer working with the paper industry in Southern California.

The Rodney Hunt Machine Co. has announced the appointment of Albert B. Julin as sales representative to the papermaking industry for the Industrial Roll Division. His territory will include all the mills in New York State.

Mr. Julin first came to the New York area in 1930 to handle pulp sales for the Dexter Sulphite and Paper Co. In 1937 he established his own agency to sell paper mill supplies to the industry in New York State. Over the years, his agency has handled many top lines.

A. B. Julin

C. W. Lockhart

The Industrial Roll Division of Rodney Hunt manufactures Shaf-tite Rolls of metal, wood, rubber, and plastic for paper machines. Recently, Rodney Hunt has also been named the sole United States agent for filled calender rolls manufactured by David Bentley, Ltd., of Manchester, England.

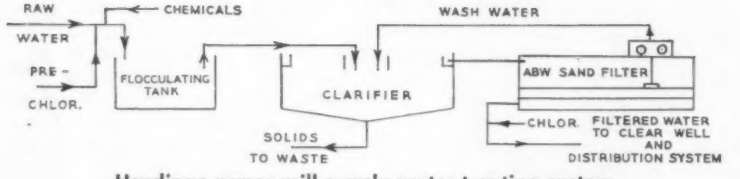
Buffalo Forge Co., Buffalo, N.Y., announces the appointment of Charles W. Lockhart as vice president, sales.

Mr. Lockhart joined the company's engineering department in 1936, was manager of the firm's San Francisco sales district from 1945 until 1953 and, most recently has served as sales manager of the Air Handling Division.

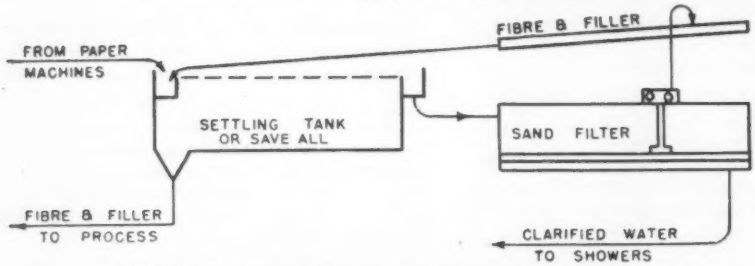
General Aniline & Film Corp., Dyestuff and Chemical Division, New York, announces a major expansion in paper application research activities, and relocation of two of the company's paper specialists in connection with this new program.

Maurice J. Landberge and Bruce G. Webster have been transferred from the company's Rensselaer,

RAW-WATER AND WASTE-WATER TREATING EQUIPMENT



Hardinge paper mill supply-water treating system



Hardinge paper mill waste-water treating system
(write for further information)

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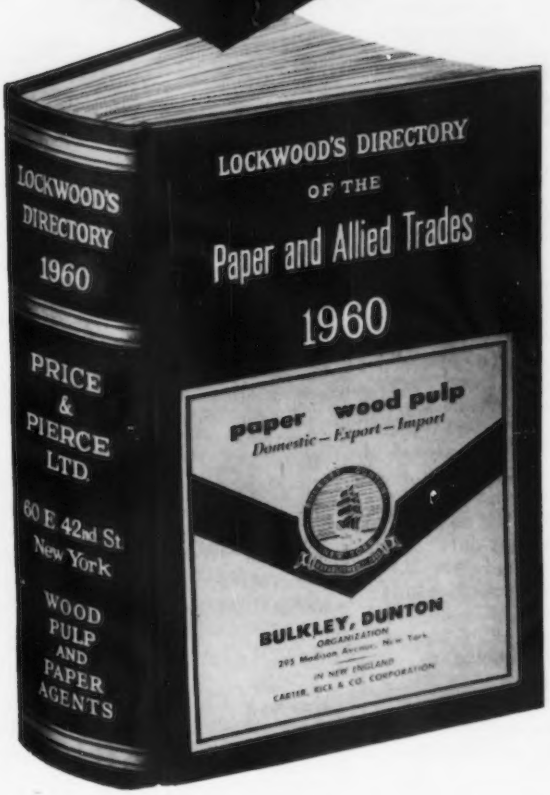
85th Annual Issue



PAPER AND PULP MILLS
UNITED STATES AND CANADA 1520 Pages
Comprehensive reports including name of Company, Officers and Operating Executives.
Location of mills shown in geographic order.
Mills identified to show whether Paper—Ground Wood—Sulphite Pulp—Sulphate Pulp—Soda Pulp—Semi-Chemical Pulp, etc.
Products manufactured. Total production in pounds per twenty-four hours.
Types of mill equipment and kind of power used.
Shipping point, railroad siding, post office, nearest bank, money order and telegraph office. Bus lines. Airport. Telephone. Highways. U. S. and State route numbers. In Canada: Kings and Provincial route numbers.

State and Provincial Maps keyed to indicate number of Paper and Pulp Mills in each City or Town.

MILL OFFICIALS
An alphabetical list of the names of officers and operating executives of the mills including their connections.

LISTS OF NEW AND IDLE MILLS

CLASSIFIED SECTION
In this section are shown in alphabetical order the products made by all of the Paper and Pulp mills in the United States and Canada.

CITY ADDRESSES
In this section are shown the names and street addresses of Paper and Pulp Mills and Mill Agents maintaining offices in the principal cities of the United States and Canada.

Reports of the Paper and Pulp Mills in Latin America and Philippine Islands.

PAPER AND PULP MILLS AND CONVERTERS EQUIPMENT AND SUPPLIES
A classified section showing machinery, equipment and supplies purchased by the pulp and paper mills and the converters of paper products, with names and addresses of the manufacturers. An alphabetical list of Leading Trade Names with names of owners.

CONVERTERS
Manufacturers of products made from paper, paper board, moulded pulp, etc. This section is geographically arranged by States and reported as follows: Name of company. Location of plant. Name of officers and operating executives. Types of mill equipment. Kind of products made.

CONVERTERS' PRODUCTS
Alphabetically classified including the names and addresses of concerns manufacturing products made from paper, card board, moulded pulp, etc., such as bags, boxes, cups, envelopes, glazed and coated paper and board specialties, papeteries, prepared roofing, tablets, pads, tags, toilet paper, towels, vegetable parchment, wall paper, waxed paper, etc., etc.

GENERAL PAPER MERCHANTS
Geographically arranged by States. Keyed to show dealers who maintain stores. Dealers who sell from mill direct. Merchants who sell from storage or warehouses. Merchants in other lines who carry paper as a side line. Concerns that are branches of houses located elsewhere. Fine Paper. Coarse Paper. Broker.

PAPER EXPORTERS AND IMPORTERS
Geographically arranged by States.

RAGS AND PAPER STOCK DEALERS
A selected list of geographic order of dealers in Rags, Paper Stock, etc. Keyed to show stocks handled. Importers are indicated.

RAGS AND PAPER STOCK CONSUMED
Kind and grade of Rags and Paper Stock Consumed by the mills in the United States and Canada. List of Purchasing Agents.

PULP TESTERS
Approved by certified pulp tester's bureau.

STATISTICAL TABLE
Showing number of concerns owning mills, together with the number of Paper and Pulp Mills in the United States and Canada.

TRADE ASSOCIATIONS
In the paper and allied trades of the United States and Canada.

WATERMARKS AND BRANDS
Alphabetical list of watermarks and brands used in the American paper trade with names and addresses of owners.

WOOD PULP AGENTS
Importers and Exporters.

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TRAVELER'S EDITION—375 pages contains ONLY the complete reports of the Paper and Pulp Mills as shown in the regular edition, the maps, the index to the mills and the alphabetical list of mill officials and executives.

LODDING
Engineering Corporation
AUBURN, MASSACHUSETTS

- DOCTORS—BLADES
- HYDRAULIC OSCILLATION
- Jet Air FUZZ REMOVERS
- No Spit STEAM SHOWERS
- Self Cleaning SHOWERS
- FRESH WATER SHOWERS

Represented by

W. E. Greene Corporation, Woolworth Bldg., New York

C. S. Connington, Barre, Mass.

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E. C. Jacobi—H. D. Wake—P. R. Bruce, 746 So. Quincy St., Green Bay, Wisc.

R. T. Barnes, Jr., 1523 Chapin Ave., Burlingame, Calif.

Pulp & Paper Mill Accessories Ltd. Box 903 Montreal, Quebec

E & M Lamort Fils, Vitry-le-Francois (Marne) France

Joseph Winterburn Ltd., Bury, Lancs., England

M. J. Landberge

B. G. Webster

N. Y., plant to the firm's Central Research Laboratories at Easton, Pa., where they will establish this new function.

The new paper application research program will be conducted in close contact with other research activities at the excellent laboratory facilities in Easton, and will thus permit considerable expansion of research work, affecting the company's sales of dyes, pigments and chemicals to the paper industry.

Mr. Landberge is assuming duties as assistant program manager for application research and technical service. Mr. Webster will work with Mr. Landberge and report to him.

Mr. Landberge obtained his B.S. degree at Syracuse University in 1933, specializing in pulp and paper chemistry. After working in paper mills for three years he joined General Dyestuff Corp. (a sales division of Dyestuff & Chemical Division, GAF) in 1936, and has been active in the field of paper dyestuffs and chemicals since that date.

Mr. Webster obtained his B.S. degree in chemistry from Montana State University in 1950, when he joined General Dyestuff Corp. in the Chicago branch laboratory on chemicals and dyes until 1958. Since then, he has been engaged in technical service on paper dyes and chemicals at the Renselaer plant.

Mr. Landberge will continue to be available as a technical representative to visit paper mills. Customer service will be performed at the Rensselaer dye laboratory as in the past.

Walworth Co., New York, a leading industrial valve and fitting manufacturer, has named Marvin H. Grove chairman of the executive committee. He has also been appointed to the newly created position of chief executive officer.

Mr. Grove is also president of Walworth's wholly owned subsidiary, Grove Valve and Regulator Co.

M. H. Grove

A. C. McCully

Samuel M. Langston Co., Camden, N. J., manufacturers of corrugated container machinery and slitters and winders, announces the new location of sales engineer Alvin C. McCully at South Shaftsbury, Vt., a suburb of Bennington.

The company said it moved Mr. McCully from the Camden office better to serve the corrugated container and paper mill industries in the Northeast. He will have major responsibility for all of New England, eastern Canada and most of New York State.

Heyden Chemical Division's Philadelphia-Wynnewood sales office has appointed Robert J. Keltz dis-

Cady Exact 10/1000ths Inch Micrometer

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Manufacturers
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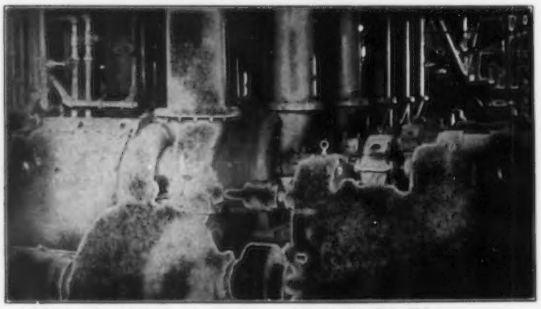
"Apmew centrifugal pulp cleaners & screens have now been installed and are working very satisfactorily." Centrifugally cleaner, more salable paper is being produced for big profits.

Occupy 10 feet by 30 feet—SAVE 81 feet by 96 feet



APMEW, Inc., P. O. Box 1, Glens Falls, N. Y.

trict manager. He has been engaged in technical service and sales activities in the chemicals processing industries for the past ten years. He joined Heyden Chemical Division in 1956 as a sales representative operating from the Newark sales office. This division produces more than 150 chemicals for the paint and varnish, plastic, pharmaceutical and chemical processing industries. Mr. Keltz was previously with U.S. Testing Co.

E. E. Kimmel

C. J. Ballos

A. E. Staley Manufacturing Co., Decatur corn, soybean and chemical processing concern, announces two appointments in its expanding market development division.

Ellsworth E. Kimmel was named director of the industrial market development department.

Constantine J. Ballos was named to head the paper industry section of the industrial market development department.

Mr. Kimmel was formerly with the Koppers Co. in Pittsburgh for 11 years in chemicals and plastics development, since 1957 as technical administrator of product development in the company's plastics division. He was previously research laboratory manager with Interlake Chemical Corp. for four years, research engineer with Battelle Memorial Institute two years, and research chemist with U. S. Steel four years.

Mr. Ballos was formerly with the Atlas Powder Co. in Wilmington, Del., for 10 years, in industrial technical sales and marketing, since 1956 as a senior technical field representative for activated carbons, polyols, surface active agents and polyester resins in the paper, textile and other chemical process industries.

Borden Chemical Co., a division of The Borden Co., has announced appointments of Gene R. Foust and Don F. Hillmer as sales service representatives for the Resins and Chemicals Department.

Mr. Foust will be responsible for sale of the company's resin and adhesive products to the paper industry in the Southeastern United States, and Mr. Hillmer in the Mid-West.

Mr. Hillmer was formerly associated with Gaylord Container Co., as a technical service representative for adhesive products.

Also announced were the appointment of Edward F. Wezowicz and Gilbert L. Hembree as technical sales representatives for the Polyco-Monomer Department of Borden Chemical.

Mr. Wezowicz will be responsible for sale of the Polyco-Monomer Department's line of synthetic resins, including thermo-plastic emulsions, polyvinyl acetate, polyvinyl alcohol, butadiene-styrene and acrylic resins to the paper industry in the New York City area. He was previously associated with E. I. DuPont de Nemours & Co., as a chemist for technical sales.

Mr. Hembree will handle sales in Wisconsin, Minnesota, and Upper Michigan. He was formerly associated with Allied Chemical Co. as a sales representative.

In the Coatings and Adhesives Department James H. Christopher, Jr., has been appointed sales manager; Seymour D. Kirsch has been appointed development manager; and Robert E. Munsell has been named

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Applications are now being accepted to fill the above key positions in Celgar Limited's 500-ton bleached kraft pulp mill under construction at Castlegar, B.C.

Here is an unusual opportunity to work with a progressive organization from start-up. Celgar is a well-established Company offering attractive job opportunities and welfare plans in one of Canada's finest residential locations.

Moving and housing assistance will be provided.

Fully experienced pulp mill personnel interested in advancement are invited to submit a confidential detailed letter of application to:

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V 5929-1

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GREENVILLE,
SOUTH CAROLINA

North East regional sales manager. In his new position, Mr. Christopher will be responsible for sale of the department's full line of adhesive and coating products east of the Rocky Mountains. He has been associated with the Borden Chemical Co. since 1954.

In his new capacity Mr. Kirsch will be in charge of research and development and will make his headquarters at the company's plant at Peabody, Mass. He formerly headed the Organic Dispersions Section of Peabody Development Laboratory.

Prior to joining Borden Chemical Co., in 1954, Mr. Kirsch had been associated with the Sandura Co.

In his new position, Mr. Munsell will be responsible for the sales of the company's full line of coatings and adhesives products. He has been with Borden Chemical since 1954.

Mr. Munsell was formerly associated with Stein-Hall Co., as technical manager. He received a B.S. degree in Chemistry from Pratt Institute, Brooklyn, N. Y., and attended New York University for graduate studies in engineering.

Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Apr. 30	May 7	May 14	May 21	May 28
1960	99.6	97.4r	98.2r	97.1	94.1
	May 2	May 9	May 16	May 23	May 30
1959	95.0	95.9	97.6	96.6	91.9

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.7	97.9	98.3	96.9‡	—	—	—	—	—	—	—	—	—
1959	87.8	90.5	93.2	94.4	95.5	95.6	84.5	96.0	92.4	97.4	96.2	86.6	94.0

‡ Preliminary

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

COMPARATIVE YEARLY SUMMARIES

	1953	1954	1955	1956	1957	1958	1959	1960
Year to Date	94.2	93.8	97.1	101.4	94.9	88.2	92.2	97.4
Year Average	92.3	91.6	96.2	97.9	90.4	87.0	94.0	—

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Apr. 30	May 7	May 14	May 21	May 28
1960	92	93	94	95	93
	May 2	May 9	May 16	May 23	May 30
1959	94	94	96	95	97

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	93	92	—	—	—	—	—	—	—	—	—
1959	89	94	95	94	96	96	83	97	92	96	94	80	92

† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paper board Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	THIS WEEK ENDING May 28, 1960	LAST WEEK ENDING May 21, 1960	CUMULATIVE TO DATE Jan. 1 to May 28, 1960 incl.
% Activity	93%	95%	93%
Total	310,595	325,053	6,609,225
Containerboard—Domestic Use	152,359	172,156	3,378,883
Liner	100,737	116,953	2,252,515
Corrugating Material	45,738	49,818	1,015,961
Chip & Filler Board	5,884	5,385	110,407
Boxboard—Domestic Use	99,558	100,636	2,077,933
Folding	61,650	62,121	1,246,594
Set-Up	11,215	11,645	239,446
Special Food Board	26,693	26,870	591,893
Other Paperboard	58,678	52,261	1,152,409
Containerboard Type	29,412	23,017	547,127
Boxboard Type	29,266	29,244	605,282
Total Orders			
Received	313,558	296,404	
Unfilled End of Week	448,196	441,637	

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GENERAL OFFICES
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May 19, 1960

Maxson Automatic Machinery Corporation
Westerly
Rhode Island

Attention Mr. J. A. Clancy

Dear Mr. Clancy:

With reference to your letter of May 5. As you know, we now have four of the Maxson Sampler Sheeters in operation in our Divisions. Three of the units have been operating for some time. The fourth, at Kellogg Division, is comparatively new and we are still in the process of training a crew to operate the unit.

The first three units have proved very satisfactory and we are convinced that this investment in enabling us to convert paper at a very substantial saving.

All in all, we feel that these Sheeters have been a very good investment and we are extremely satisfied with their operation.

Very truly yours,
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Lowest Maintenance
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Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

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Up to 1200° F. to absorb piping vibration

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UNIVERSAL "UC3" STANDARD
All-Metal
Stainless Steel *Flexible*
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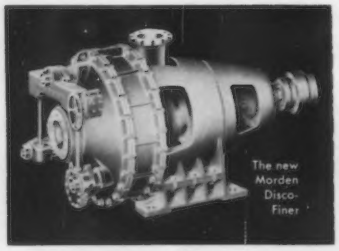

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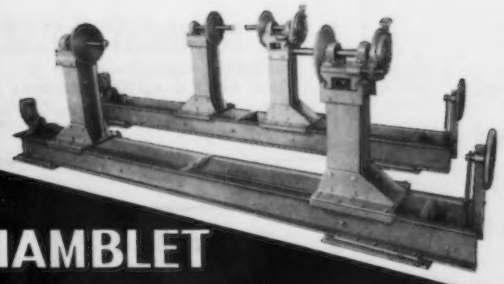

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with New "tape-over" sewing feature
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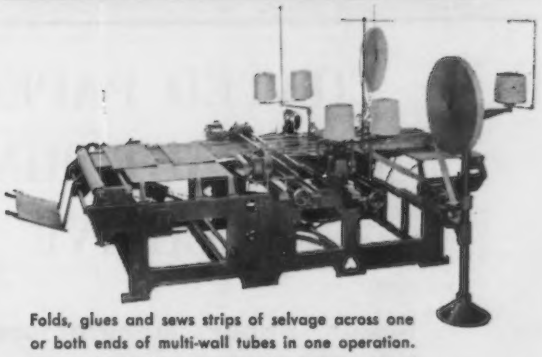

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Location in ideal surroundings in Eastern U. S.

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J-20

Help Wanted advertisements continued on page 68

Help Wanted

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$5,000 to $50,000

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To train for Assistant Superintendent.

MACHINE TENDER
To train for Tour Boss.
Both must have experience running .009 corrugating medium on Fourdrinier machines.

ASST. PULP MILL SUPERINTENDENT
With continuous digestor experience.
Attractive compensation. Relocation expenses. Vacation schedule and fringe benefits.

Send letter or resume giving full details of education, experience, salary requirements, family data, etc.

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care Paper Trade Journal. J-13

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CHEMICAL ENGINEER—Preferably with Paper Mill operating or Quality Control Experience—wanted to grow with a strong medium sized company.

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1—Potdevin 1 & 2 ply tuber; 5¾" to 14" face; 10¼" to 33" pull; w/motor & elec eye
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1—S&W 1 to 4 ply tuber; PV, SOM, & POM; 10" to 24" face; 22" to 43" pull; w/15 hp VS drive

BEATERS
2—3000# Downingtown w/60" face x 57" dia roll; like new

CALENDER STACKS
1— 80" P & J 7 roll; heavy duty
2— 82" & 86" Lobdell five roll
1—115" B-C 7 roll
2—124" Downingtown 5 roll & 6 roll

CHEST AGITATORS
2—New Shartle vertical w/3 sets propellers & Falk 40 h.p. right angle drive

CHIPPERS
1— 88" Murray 10 knife w/600 hp motor
1— 96" Murray 6 knife; A-F Brng.

COATERS
1— 24" Waldron Coater & Embosser
2— 40" Chapman Extrusion Type
2— 65" & 76" Mayers

COMPLETE MACHINES
3—Sandy Hill 81" trim single cyl. Tissue
1—M & W 72" Fourdrinier paper machine
1—P&J 74" trim single cyl felt machine
1—B-C 100" 2 cyl. Board Machine Complete

CYLINDER MOLDS
2— 63" face x 36" dia w/rubber couches
1—104" face x 36" dia
1—107" face x 48" dia; A-F Brng
8—124" face x 36" dia w/rubber couches
1—131" face x 42" dia; A-F Brng
1—136" face x 54" dia; SS covering

CYLINDER WET ENDS
Downingtown single cylinder; 99" face x 48" dia.; 18" dia. couch

DRYERS—HYDROSTATICALLY TESTED

24" Dia.:
39—46" face; Chrome plated
1—156" face w/gear and steam joint

28" Dia.:
3— 70" face w/gears & bearings
3— 73" face w/gears & bearings
3— 76" face w/gears & bearings
3— 77" face w/gears & bearings
2— 84" face
2— 84" face w/accessories

36" Dia.:
1— 42" face
2— 44" face
2— 46" face
4— 70" face w/gears & bearings
11— 72" face w/gears & bearings
1— 74" face Lukenweld w/A-F Brng
1— 74" face w/gears & bearings
3— 75" face w/gears & bearings
9— 76" face w/gears & bearings
1— 77" face w/gears & bearings
1— 78" face w/gears & bearings
2— 80" face
5— 84" face
18— 90" face; complete section
9— 92" face; complete section
1—138" face
10—160" face

42" Dia.:
45— 96" face w/gears, frames & bearings
1—120" face
1—160" face

48" Dia.:
57— 46" face; chrome plated
13— 82" face; complete section
5— 84" face
24—106" face
11—106" face w/gears & bearings
8—110" face w/gears & bearings
9—110" face w/frames & bearings
10—123" face w/gears, frames & bearings
1—128" face

DRIVES—ENCLOSED RIGHT ANGLE
1—Beloit 65 h.p. Ratio 2.88 to 1
4—Jones 65 hp Ratio 4.83 to 1
1—Michigan 92½ h.p. ratio 10.1 to 1
1—Phila. 28 h.p. Ratio 10.56 to 1
1—50 h.p. Reliance VS with MG set & controls

EMBOSSERS
1— 80" Hudson Sharp; A-F Brng
2— 62" Textile Machinery Co; w/drives

EXTRACTOR ROLLS—DOWNINGTOWN
2—139" face x 24" dia.; A-F Brng.
1—128" face x 24" dia.; Complete Section

FILTERS—STEEL VATS
1— 10' face x 8' dia Oliver chem. sludge filter

FLAT SCREENS
2— 12 Plate IMPCO w/Dunbar Drives
1— 4 plate Tailing Screen

INLETS & HEADBOXES
1—106" Valley w/8" distributing roll
1—131" Valley w/10" distributing roll; SS lined

JORDANS
2—Appleton #1 w/A-F Brng
1—N & W Pony w/75 h.p motors
1—Horne w/AF Brngs
5—Shartle Miami #2 w/A-F Brngs

MOTORS 3 PH 60 CYCLE
1—100 hp GE; 440 v; 695 rpm
1—250 hp West. 450 v., 450 rpm. Synchronous/exciter
1—300 hp West; 2200 v; 503 rpm
1—350 hp GE; 2200 v; 720 rpm; Synch
1—1100 hp West; 2200 v; 257 rpm; Synch
1—1500 hp GE; 2200v; 225 rpm; Synch

PAPER MACHINE DRIVES
1—De Laval 100 h.p. steam turbine w/reducers

PULP MILL EQUIPMENT
1—Lannoye #1 Pulper

PUMPS—OPEN IMPELLER
1—Shartle 10 x 20 Duplex
23—Centrifugal Stock and Water Pumps

REELS
1—100" Kohler automatic two arm unwind reel; 60" dia rolls; new condition
1—109" two bowl upright
1—123" Beloit—2 bowl
1—126" Beloit Aldrich surface drive type
1—146" B & S pope type w/Reliance drive

REFINERS
2—#1 Claflin; A-F Brng
1—24" Bauer Double Disc w/two 50 h.p. motors
1—24" Downingtown Weiner; new

ROLL GRINDERS
1—124" x 30" Farrel w/crowning device
1—208" x 32" Farrel w/crowning device

ROLLS

Distributor—Stainless Steel
2— 8" dia. x 115" face
1— 6½" dia. x 115" face

Couch—Rubber Covered
20 Misc. Sizes Dwngs Available

Press—Rubber or Brass Covered
71 Miscellaneous sizes. Drawings available

Felt—Steel, Brass, Rubber Covered
335 Miscellaneous sizes. Drawings available

Calender—Chilled Iron
72 Miscellaneous sizes. Drawings available

ROTARY SCREENS
5—Bird #3A, Model 100 w/copper vats
1—Jones & Leithwalk copper lined

SAVEALLS
1—48" face x 42" dia; iron end vat
1—78" face x 48" dia; wood vat

SHEETERS
1— 36" Beck w/layboys & backstand
1— 45" Beck w/backstand & jogger
5— 56", 60", & 70" Hamblets w/backstands
2— 65" Kidder w/elec. eye and layboy
1— 76" Beloit Duplex
1— 82" Hamblet w/backstand
1— 85" Hamblet duplex w/layboy, 10 roll backstand
1—105" Hamblet
1—112" Downingtown Duplex Board Cutter; A/F Brng

SLITTERS & REWINDERS

17¾" Maximum Rewind Diameter
1—42" Cameron Type 26-2A

24" Maximum Rewind Diameter
3— 42" Cameron Type 6
1— 42" Cameron Type 6 Shear Cut
1— 62" Cameron Type 8
1— 72" Cameron Type 9-5

30" Maximum Rewind Diameter
1— 60" Langston Shear Cut
1— 72" Cameron Type 10; A-F Brng
1— 72" Cameron Type 10 Shear Cut; A-F

36" Maximum Rewind Diameter
1— 52" Johnstone Model 14H; A-F Brng.
1— 62" Cameron Type 8
1— 70" Variable Speed Center Winder
1— 72" Cameron Type 10; A-F Brng

42" Maximum Rewind Diameter
1— 40" Egan Shear Cut; A-F Brng
1— 60" Kidder Model SH Low Bed
1— 72" Beloit Shear Cut
1— 92" B & S; A-F Brng
1—136" Cameron Type 18; A-F Brng
1—161" Cameron Type 18 w/60 hp Reliance VS Drive

48" Maximum Rewind Diameter
1— 82" Langston Shear Cut; A-F Brng
1— 86" M & W Four Drum Shear Cut
1—110" Langston
1—152" Langston Shear Cut

60" Maximum Rewind Diameter
1—112" Cameron Type 18
1—120" M & W two drum w/75 h.p. drive
1—120" Langston
1—136" Langston Type DA Shear Cut; A-F

SLITTERS & REWINDERS—DOUBLE REWIND

24" Maximum Rewind Diameter
1—42" Cameron Type 26-3A, w/constant tension unwind stand
2—48" Langston Shear Cut

30" Maximum Rewind Diameter
1—42" Essex Shear Cut; A-F Brng.
1—42" Cameron Type 28-3
1—92" Cameron Type 28-3 w/vari-drive

STOCK CLEANERS
2—1000 g.p.m. Shartle Hydrafuges w/motors
14—Bird Dirtecs; 2" & 6" bronze
1—Bird Dirtec 12". Rebuilt by Bird

STOCK REGULATORS
2—Braemer SS; 25 t/d cap
1—Braemer SS; 50 t/d cap

SUPERCALENDERS
2— 30" Norwood 4 roll
2— 63" Norwood 8 roll; A-F Brng
1— 92" Norwood 7 roll w/drive

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1—105" face x 19" dia.
1—126" face x 22" dia.; complete section
1—134" face x 20" dia.; A-F Brng.

SUCTION PRESS SECTIONS
1—126" face x 24" dia. RC; complete section
1—134" face x 22" dia. Sandusky w/frames, top roll, etc.

TRIMMERS—POWER BACK GAUGES
2— 38" Seybold w/motors
1— 57" Seybold Precision
2— 65", 74" Seybold Daytons

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4—L-5 & L-7 Nash
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YANKEE DRYERS
1—132" face x 10' dia Beloit; 35 psi

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Graduate Mechanical Engineers with at least 2 years pulp and paper mill experience. Work involves design, equipment layout, and project coordination of paper mill projects and related work.

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Calhoun, Tennessee

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